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CONTROLLING AND REDUCING POLLUTION FROM PLASTIC WASTE

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

FIRST SESSION

ON

S. 559, S. 560, and S. 633

BILLS TO CONTROL THE DISPOSAL OF PLASTIC WASTE AND FOR OTHER PURPOSES

JUNE 1, 1987—NARRAGANSETT, RI
JULY 7, 1987—ASBURY PARK, NJ
SEPTEMBER 17, 1987—WASHINGTON, DC

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CONTROLLING AND REDUCING POLLUTION FROM PLASTIC WASTE

MONDAY, JUNE 1, 1987

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Environmental Protection,
Narragansett Bay, RI.

The subcommittee met, pursuant to notice, at 1:15 p.m., in the Corless Auditorium, University of Rhode Island, Bay Campus, Narragansett, Rhode Island, Hon. John H. Chafee presiding.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator Chafee. The subcommittee will be in order.

As you know, we were originally scheduled to start at 11 o'clock. Unfortunately, there was the sad death of former Governor Leach and the funeral took place today at noon, thus, the postponement until now, a little after 1:00. But we want to thank you very much.

Secondly, I want to say this is an official hearing. In other words, we will have a transcript, a record, and the results will be published in normal course.

This is a hearing of the Subcommittee on Environmental Protection of the Senate Committee on Environment and Public Works. I chaired this subcommittee until last January when there was a change in the composition of the United States Senate due to the November elections, and the distinguished Senator from Maine, Senator Mitchell, is now the chairman of this subcommittee and I am the senior Republican.

We want to welcome everybody. The purpose of today's hearing is twofold. First, we will try to assess the impact of plastic pollution on the environment, especially the effects on fish and wildlife. We look forward to hearing the testimony of those distinguished experts in that area.

Last week in Newport I met with a group of sailors who had sailed around the world in a single-sailor race. As you may recall, it had four legs with just three stops. I asked them whether they had met much pollution as they sailed in the extreme southern latitudes going across from Capetown to Sidney for example. They answered, yes, they had spotted large amounts of plastic floating on the surface of our oceans, and the problem was especially egregious near our coast.

That group, it was interesting to note, made a pledge—those around-the-world, single-handed sailors made a pledge that they wouldn't dispose of their plastic waste overboard. Each of them saved it and they brought it to the gathering we had in Newport last week. It was amazing to see the results of how much plastic one sailor had accumulated on one leg of the journey which was a little over 7,000 miles, about 30 days. It was three great big monstrous garbage bags. They weren't very heavy, but they were full of plastic—plastic bottles, cartons, and things like that. We're going to look at that first.

Second, the comments by the witnesses should focus on the adequacy of S. 559, the Plastic Waste Reduction Act, which we have before us, and S. 560, which is a bill to implement the provisions of Annex V to the International Convention for the Prevention of Pollution from ships, commonly known as MARPOL.

This legislation which I introduced in the Senate is presently being considered by our subcommittee. S. 559 tackles the plastic pollution problem in the following ways: first, it requires EPA to recommend to Congress methods to lessen or eliminate the adverse effects of plastic pollution. EPA will be required to look at the feasibility of using degradable plastics in fishnets, packing bands, and other plastic products which pose a threat to the environment.

I understand that Ms. Rogers, who is a representative of the Society of the Plastic Industry, is present at the hearing today and will answer some questions on the state of the art in the industry.

Also, as part of that legislation, S. 559, EPA will evaluate the use of incentives to reduce improper plastics disposal, such as recycling, bounties, or rewards. We'll be particularly interested to hear from Mr. Richard Allen from the Atlantic Offshore Fishermen's Association whether there is some inducement that can be used to encourage fishermen to collect their discarded or lost fishing nets. They're one of the principal problems and they are plastic. They last forever. They float around in the ocean and all kinds of wildlife get tangled up in them. This is no easy job to collect these things. Some of them are miles long.

S. 559 also provides for a ban on nondegradable plastic six-pack holders and other plastic beverage containing devices. We've seen pictures of seagulls ensnared in the plastic six-pack holders, for example.

We'll be interested to learn from witnesses who are involved in this whether something can truly be done.

Perhaps the most important part of the legislation focuses on public education designed to encourage the proper handling and disposal of plastics around the marine environment. That is S. 559.

Let's look at the next one, S. 560. This addresses a major source of plastic pollution, plastic garbage intentionally dumped from ocean-going vessels. This bill creates domestic legislation which implements the provisions of Annex V of the MARPOL treaty, which, as I understand it, the U.S. has signed but needs enabling legislation. It's become bogged down.

Most of the plastic in the marine environment does not come from people going to beaches and dropping it but from ships at sea tossing it overboard. While accidental loss of plastic items from ocean vessels and beaches contributes some, deliberate disposal at sea is the greatest problem.

The United States is expected to ratify the MARPOL Annex V within the next few weeks. My bill will assure the domestic legislation needed to implement the provisions of this treaty so it will be enacted without delay.

Let's get started. I would like to thank everybody for coming.

The first group of witnesses is composed of familiar faces: Dr. John Knauss, dean, as of now, of the School of Oceanography, and I think retiring—John, when are you retiring?

Dr. KNAUSS. June 30th.

Senator CHAFEE. June 30th, 30 days.

The panel is also composed of Ms. Jane Hopkins, environmental scientist at EPA, and Bob Bendick, director of the Department of Environmental Management.

Why don't we start with Dr. John Knauss.

John, we welcome you here.

STATEMENT OF JOHN KNAUSS, VICE PRESIDENT, MARINE PROGRAMS, UNIVERSITY OF RHODE ISLAND

Dr. KNAUSS. Thanks, Senator.

I have a fairly brief statement and maybe I can just read it rather than try to summarize it. I probably can read it faster than I can summarize.

Senator CHAFEE. Sure.

Dr. KNAUSS. I am in favor of S. 560 which will bring the United States in compliance with Annex V of the 1978 MARPOL Convention. I am also in favor of S. 559 which calls upon EPA to consult widely and come forward with recommendations to reduce the amount and adverse effects of plastics which are disposed of in the environment. I will limit my comments to plastics found in the marine environment, if I can, sir.

The problem is a relatively new one. So far as I have been able to determine, systematic discussions of plastics in the ocean began in 1971, only 16 years ago. Although the scientific literature is still not large, one can find records of plastics in all oceans, as you noted, including the Antarctic and on most beaches including those in the South Pacific and the Arctic.

It has been estimated that 50 percent of all ocean surface debris large enough to be seen from a vessel is now plastic, and the percentage is considerably larger if you include the very small resin beans that are the raw material for plastic products.

It is also clear that the debris problem will get worse before it gets better. Plastic products are long lived. They break down very slowly, two to three years if exposed to sunlight, generally much longer if not.

Perhaps more important, the use of plastics is growing. In 1966 the worldwide production of resins for plastics was about 12 million tons; 15 years later, which is the latest date I have on a worldwide basis, it had quadrupled to 48 million tons, and the end is not in sight.

We now have plastic soft drink cans and the industry believes it is only a matter of time before nearly everything now in other packaging will be in plastic. Furthermore, progress is being made in reducing the photo oxidation effects on plastics and thereby increasing its longevity.

The plastics industry is large and it is important. A composite product such as polypropylene rope for fish netting is clearly superior to the natural hemp of an earlier generation, and most of us prefer our wrinkle-free summer suits with its high percentage of plastic to the cotton and linen of an earlier day that required continual ironing.

The plastics industry is here to stay. The question that needs to be addressed is what is the impact, if any, of this growing plastic pollution problem in the ocean and on our beaches, and if it is an important problem, what can we do to solve it?

I have generally found it useful to separate the effects of pollution into three classes: human health, ecological, and aesthetic. Eating contaminated shellfish, breathing air-laced with plutonium or drinking water with a high dioxin content are well-known examples of human health problems resulting from pollution. Almost wiping out the brown pelican population off Los Angeles because of DDT dumping or depopulating Appalachian lakes because of acid rain are examples of ecological changes. They are a major health problem to the species involved, but there is little or no direct effect on human health, so I call these ecological problems rather than human health problems. Beer cans along the highway and trash on the beaches are examples of aesthetic pollution.

As near as I can judge plastic pollution, at least in the marine environment, is not a human health problem. I have found one reference to speculation that one or more fishing boat losses in the Bering Sea may have been because a storm hitting a boat that was broken down because it had caught some drifting net or line in its propeller.

Aesthetic pollution is another matter. During a three-hour period in 1984, some 2,100 volunteers collected 26.3 tons of plastic debris from Oregon beaches, and they counted it: 1,442 six-pack rings, 48,898 chunks of styrofoam larger than a baseball, 4,787 plastic bottles, et cetera, et cetera. Most of the debris was believed to be from ocean drift, not deposited by beach-goers, which I found surprising.

Similar cleanups have been done in a number of States including Rhode Island with similar results. No one who sails Narragansett Bay, goes to our beaches, or who travels on the ocean can escape seeing debris, most of it plastic. It is a major problem and we should do something about it.

The most difficult issue on which to get hard data is what I call the ecological effects of plastic pollution in the marine environment. Has there been, or is there likely to be, a significant impact on any marine animals or plants because of plastics? We have all seen at least one picture of a shore bird skewered to a six-pack ring over its beak and unable to open its mouth. Physiologists have found plastic debris in as many as 90 percent of certain shore birds such as fulmars. Plastic has also been found in the gut of fish including larval fish.

However, my search of the literature did not turn up any documented studies of significant population changes, increased mortality or reproductive problems because of plastics in either fish or birds. This is not to say that plastics do not contribute to mortality, but simply to note that to date at least no one has evidence that the effect on either mortality or reproduction rate is large enough to affect significantly the population balance of any species of fish or marine bird.

Turtle and marine mammals may be another matter. Some turtles such as the loggerhead feast on jelly fish, and apparently plastic bags look enough like jelly fish to fool a turtle. Plastics have been found ingested by turtles, and at least in some cases was the probable cause of death. Many turtles, including the loggerhead, are on the endangered or threatened species list. They are not there because of ingesting plastic, but because of loss of their breeding grounds and perhaps, secondarily, because they are caught by shrimp and fishing trawls. The occasional death of a loggerhead turtle unable to digest a piece of plastic film may not have much impact on a healthy population of turtles, but for an animal striving to survive it is one more blow by human kind to a species that is already fighting difficult odds.

The Bering Sea Pribilof seal population apparently presents the best evidence of a significant change in population because of plastics. The seal population has been decreasing for a number of years. This coincides with the growth of the Bering Sea fisheries. Young seals in particular get entangled with fishing net remnants floating free in the area. Estimates have been made of the number of seals entangled and the rate of loss. The model agrees well with the observed population decrease. I would note, however, that the model has its skeptics. The fur seal population is decreasing; that much is clear. Not everyone agrees the reason is net entanglement. The author of the model makes a strong argument but, as he notes, the evidence is circumstantial and is based on a few unverifiable assumptions.

In summary, then, Mr. Chairman, the plastic debris problem in the marine environment is growing. Growth prognosis from the plastic industry project an ever larger and varied supply to be discarded in our oceans and estuaries and on our beaches. This plastic invasion is probably not a significant human health problem, and the evidence, to date at least, suggests that its ecological effect is less than a number of other pollutants with which we are concerned.

Aesthetically, however, our beaches are beginning to look like our road sides. Plastic debris floating in the ocean can be tracked by the casual observer further seaward than industrial haze. We should do what we can now to reduce the plastic input. S. 559 and S. 560 will not solve the problem, but they are a start.

Thank you, sir.

Senator **Chafee**. Thank you very much, Dr. Knauss.

Now let's hear from Ms. Jane Hopkins from EPA.

STATEMENT OF JANE HOPKINS, ENVIRONMENTAL SCIENTIST, ENVIRONMENTAL PROTECTION AGENCY

Ms. **Hopkins**. First of all, I would like to thank you for the opportunity to testify today before the subcommittee. Lack of time and notification prevent me from commenting on the legislation that's now being considered, so I will focus my remarks on the problem of toxic pollution, and in particular on a study that was recently commissioned by EPA on the subject of plastic debris.

As you and Dr. Knauss noted, the disposal of nondegradable plastics in the marine and estuarine environments has recently become a concern, both nationally and internationally. A growing body of evidence indicates that when plastic materials are discharged, lost, or abandoned in the oceans, they may adversely affect marine life and the coastal communities. Although various national and international statutes and regulations presently exist to address disposal of wastes at sea, legal ambiguity, the lack of provisions devoted specifically to plastics, and the difficulty of enforcement have so far prevented a satisfactory solution to the problem.

Meanwhile, the presence of plastics continues to grow. It's been estimated that as many as 639,000 plastic containers are dumped worldwide per day by ship. Plastic debris from other sources is accumulating as well as more and more domestic items are made from plastic.

As noted, the chief problem is that plastic, unlike other kinds of wastes, simply does not degrade rapidly. Plastic items can remain intact for years or perhaps even centuries. Improper disposal of large quantities constitutes a persistent and a growing problem.

EPA has recently commissioned a study from the Center for Environmental Education to investigate the problem of plastic debris. CEE conducted an in-depth review of all existing literature, reports, and surveys devoted to the problem. They consolidated information on the types and quantities of this debris, its sources, both land and marine-based, and the potential effects it has on wildlife and coastal communities. Based on this report and the reports of other agencies addressing the problem, EPA has concluded that there is enough documentation of the problem to indicate serious concern.

Plastic debris that enters the marine environment has been categorized either as manufactured plastic articles or as raw plastic particles. Manufactured articles include those things that have been fabricated into consumer products. They include such things as commercial and recreational fishing gear, plastic packaging materials, bags, bottles, sheets, six- pack yokes, and styrofoam cups.

Of the manufactured articles entering the marine environment, fishing gear, in the form of gillnets, trawlnets, traps, buoys, ropes, and monofilament fishing line is some of the most common. NOAA has estimated that roughly 139,000 metric tons of fishing gear are lost annually. Plastic strapping bands and sheeting from ship's cargo are also frequently lost.

Raw plastic particles, which are synthesized directly from petrochemicals and then used to make plastic articles can enter waterways via outfalls or from ships, particularly when cargo is loaded or unloaded. At present it's really difficult to estimate how much of these plastic pellets are being lost in the environment, but the widespread presence of these pellets in remote places indicates the releases could be substantial.

Although plastic debris can be generated on land and at sea, it's believed that much of this trash is coming from ocean dumping. While accidental release is a problem, deliberate release appears to be the bigger source. Research groups attribute unauthorized ocean dumping to a lack of alternative means of handling shipboard wastes. Grinders, compacters, and incinerators are all costly and oftentimes they are impractical to have on board ship. Furthermore, many port facilities, both in the United States and abroad, are ill-equipped to handle the wastes that ships bring back with them. Merchant ships, the U.S. Navy, and passenger ships are all contributors of plastic wastes in the ocean.

Commercial fishing operations also dispose of plastic materials at sea. Since the early 1960's most fishing gear has been made from plastics because it's durable, lightweight, and it's less costly. Fishing gear can be lost accidentally due to accidents or storms, but there's also deliberate release of fishing equipment because it's convenient and sometimes foreign vessels cut loose fishing gear to avoid detection by the Coast Guard of illegal fishing activities.

Oil rigs are strictly prohibited from dumping wastes, but, nevertheless, they are the source of large quantities of plastic domestic items and equipment that turn up on shorelines and the coastal areas. Common littering adds to the problem. In Los Angeles alone beach-goers are reported to leave behind 75 tons of trash per week, a lot of which is plastic.

Plastic wastes are sometimes discharged from sewage treatment plants combined with storm runoff systems which during times of heavy rainfall may carry the trash out to sea. Some coastal areas have reported densities of plastic particles as high as 2,000 pellets per cubic centimeter. This would suggest that some plastic pellets are being discharged directly into these river systems.

Plastic debris in the oceans and on shore lines harms wildlife and it constitutes an enormous and persistent litter problem. It's difficult to accurately reckon the numbers of marine animals killed by plastic trash, but researchers have estimated that hundreds of thousands of marine animals and birds die each year because they become entangled in or they ingest plastic materials. Some of these species are on the endangered species list.

The cases of the Hawaiian monk seals and the Alaskan fur seals have already been cited. Some think that the decline in the population of the fur seals may be due to entangled nets.

When sea turtles are caught in net fragments of fishing lines, they are often rendered unable to swim, feed, or surface to breathe. Thin wire-like fishing line can damage flippers causing necrosis of the flippers or lesions. Fishing-related debris has been cited in 68 percent of all entanglements of sea turtles, and sea turtles are known to ingest plastic bags which they may mistake for their favorite food item, jelly fish. Animals that ingest plastic fragments can suffer flocked digestive tracts, ulcerations, perhaps loss of appetite, or strangulation.

Sea birds are also subject to ingestion of plastic articles and entanglement. Several species of birds have been cited with their necks caught in the rings of six-pack yokes. Young birds are sometimes trapped in plastic debris interwoven with nesting materials.

The litter problem caused by plastic debris has resulted in costly damage to coastal communities. Some beach communities have reported large economic losses because of dropoffs in tourism. Coastal communities in New England, the New York Bight area, the Chesapeake area, several southern Atlantic States, Texas, the

North Pacific, Alaska, and Hawaii all reported significant litter problems from plastic debris.

Padre Island National Seashore in Texas is a case in point. In 1985, 140 tons of trash were reported for a 57-mile stretch of coastline. Sampling studies indicated that about only 10 percent of that trash came from beach-goers. The remaining 90 percent was washed ashore from the Gulf Coast, and it consisted of such things as large plastic sheeting, plastic computer rings, drilling pipe thread protectors, and hundreds of plastic milk jugs, and even some hard hats from oil rigs. The cost of cleanup for just a half mile of beach was about $10,000.

The problem of plastic litter is not limited to these heavily populated areas. A recently-published magazine article noted that on the remote beaches of Beaufort Island off the Arctic Sea in Alaska, a plastic toy, disposable, lighters, and plastic pellets were found. Similar items were found on an island 1,000 miles northwest of Honolulu.

A number of groups that have studied the issue of plastic debris have made some recommendations for possible solutions. These include increasing research efforts to develop degradable plastics that can be used in commercial products; implementing recycling programs where feasible; controlling the release by industry of raw plastic pellets to the marine environment; developing improved shipboard facilities for handling wastes; improving port facilities for handling wastes; strengthening legal authorities aimed at controlling plastics dumping and improving enforcement of existing regulations; and, finally, conducting further research on the effects of plastic trash on marine species.

Some of these recommendations have already been begun by several groups. NOAA, for example, has developed a marine entanglement research program to investigate the source of debris. They have established an education program to increase awareness of the adverse effects caused by unauthorized dumping, and they've also, aided by the Marine Mammal Commission, begun further research on the effects of plastics on marine mortality.

EPA has commissioned the study that I spoke of, and we're providing support to research groups by giving expert review of research proposals and reports on recycling, the development of degradable plastics, and on environmental effects studies. We are also involved in the U.S. delegation to support ratification of MARPOL Annex V. We are an active member of the interagency work group formed by NOAA to provide a forum for exchanging information on plastic debris.

Finally, the Plastics Society has also been involved in the issue. The Society of Plastics has begun a plan to heighten awareness of the problems that resin pellets can cause to marine life and they're hosting a seminar devoted to the plastics debris issue in early June. They have invited all the interested groups to attend.

At the same time this interagency work group will meet, and EPA plans to use that as a forum to generate new ideas and further proposals for action by the Agency and other groups.

Thank you.

Senator CHAFEE. Thank you very much, Ms. Hopkins.

Now we have Mr. Bendick of the Rhode Island Department of Environmental Management.

STATEMENT OF ROBERT L. BENDICK, JR., DIRECTOR, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, STATE OF RHODE ISLAND

Mr. **Bendick**. My name is Robert L. Bendick, Jr. I am the director of the Rhode Island Department of Environmental Management. The department is the comprehensive environmental agency for the State of Rhode Island. It includes both environmental protection and resource management functions.

It is a privilege for me to testify before this hearing of the Senate Environment and Public Works Committee and its subcommittee, particularly before Senator Chafee. In my five years as director of DEM I've found that Senator Chafee has a deep personal commitment to environmental protection. This hearing and the legislation being discussed here reflect a continuation of that commitment.

Last fall I had the opportunity to walk two of Rhode Island's least visited beaches. On Block Island, 12 miles off the State's southeast coast, the stony shoreline at the base of the cliffs at Dickens Point faces south. The nearest land is the Bahamas more than a thousand miles away. The beach is not open for swimming and is separated from the general public use by a 300-acre nature preserve. I saw no one else along the shore the day I was there. Yet despite its remote location, despite its facing the open ocean, despite having no public use, the beach at Dickens Point last October was littered, in places covered, with plastic containers, six-pack holders, styrofoam, fishing line, pieces of commercial fishing gear, even recording tape.

The north end of Prudence Island is at the center of the Narragansett Bay National Estuarine Sanctuary. While surrounded by increasingly developed suburbs on both shores of the bay, the north end of Prudence is a 1,000-acre preserve of woods, fields, and salt marshes inhabited only by deer, fox, and wading birds. As at Dickens Point, the stony beaches of the north end of Prudence Island are not used for swimming, are seldom used for walking. Yet here, too, in this place which has been given national status as an outstanding example of estuarine habitat, the shoreline was covered with plastic litter.

The plastic refuse in these beautiful and remote places did not come from the land. It drifted in on the waters of a Narragansett Bay and an Atlantic Ocean which are increasingly filled with garbage which does not degrade, but which is accumulating in a variety of sizes, shapes, and chemical compositions. It is not clear what impacts this flotsum is having on the marine environment, but it should be clearly understood that the waters around Prudence Island and Block Island are rich and critical habitat for marine life, and that filling these waters with plastic may have serious impacts on marine ecosystems.

There are already disturbing incidents and trends:

Dr. Howard E. Winn of the University of Rhode Island has documented that sea turtles mistake plastic bags for jelly fish and die when the plastic is ingested. Several species of sea turtles, as has been mentioned, are endangered.

As long ago as 1972, a study of fish in southern New England showed that 8 out of 14 species examined had plastic pellets in their digestive systems. Plastic use has increased dramatically since 1972.

It appears that plastic debris may be accumulating in small particles as well as large pieces. According to a DEM biologist, tiny bits of plastic are increasingly found everywhere in the aquatic environment.

Monofilament fishing line entangles fish and bird life. One of Rhode Island's few nesting ospreys became entangled in monofilament line at Napatree Point in Westerly. Fortunately, the bird was rescued.

Finally, synthetic commercial fishing gear may continue to catch and kill marine life, even when lost. Analysis of the fishermen's gear damage and compensation fund showed 48 miles of synthetic gill nets lost in New England during the winter of 1985–86 alone.

It is not surprising that our coastal waters are full of plastic. Rhode Islanders produce about 600,000 tons per year of solid waste. About 12 percent of this is estimated to be plastic. This percentage is increasing rapidly. In general, the problem of disposal of plastics has become the country's most serious solid waste disposal problem. Manufacturers continue to put new kinds of plastic products on the market, each with a different chemical composition and with different physical characteristics. Most of these products do not degrade in landfills and thus take up landfill space, produce significant air pollution when burned, and are difficult to recycle because of their varying chemical properties. The growing problem of plastic waste in the marine environment is just a reflection of the growing problem of plastic waste in the overall environment.

To deal with these problems we must take steps to address the overall production and use of plastics, but this will take time and the marine environment and marine and bird species can't wait. Last year the Rhode Island legislature passed a law requiring that the plastic connecting devices on six-pack containers of beverages must be made of photo-degradable plastic. This law becomes effective July 1, 1987, but it is not sufficient.

S. 559 and S. 560, which Senator Chafee has introduced, are important and positive steps forward. It is clear that the knowledge about plastic pollution in the marine environment is fragmented, that States are proceeding in an uncoordinated way, and that some of the problems are beyond State authority. The study called for in S. 559 is an essential first step toward solving the problem in a rational way. And because the waters of several States intersect in places like Block Island Sound, standardizing the requirements for degradable container holders is also important.

S. 560, which implements the provisions of Annex V to the International Convention for the Prevention of Pollution from Ships, is also important in the northeast because of the heavy ship traffic off our shores and the productivity and sensitivity of our nearshore waters. The only change I would consider in both bills is to insure that styrofoam, which breaks down into small pieces but does not easily degrade, is included in the definition of plastics.

The State of Rhode Island and conservation groups have made a great effort to create open land preserves on Block Island and Prudence Island. To see these beautiful and naturally important places littered with plastic debris washed in from the bay and the ocean is depressing in itself, but it is also a reminder, a symbol that our environment is interconnected, that what we do in one place affects other places, other things. The wood, paper, plant fiber, brick, and stone which we once used for packaging, rope, boats, and buildings were of nature and, when thrown away, became again part of the natural system of decay. The synthetic materials which we now use for many purposes are not part of a natural system and thus may intervene in the sensitive web of life of our near-shore waters. These bills are timely, needed measures to address this issue and should be passed as soon as possible.

Thank you.

Senator **CHAFEE**. Thank you very much, Mr. Bendick, and each of you. I have some questions.

Ms. Hopkins, in your testimony you refer to a report entitled, "The Use and Disposal of Nondegradable Plastics in the Marine Great Lakes Environment." My question is: what's EPA's response been to the report and do you have the authority, under the Toxic Substances Control Act, to do anything about it?

Ms. **HOPKINS**. Our response to the study has essentially been to use the study to draw some conclusions about the seriousness of the problem. I think that study does document the seriousness of the issue.

As to whether the Toxic Substances Control Act has any applicability to the issue, the Toxic Substances Control Act says that chemical substances or products made from chemical substances that may present or will present an unreasonable risk of harm to health or the environment are subject to section 6 of TSCA and can be regulated. Plastics can be said to fall under that, and possibly the regulation of nondegradable plastics, the characteristic of nondegradability being considered to present an unreasonable harm, could be regulated under section 6 of TSCA.

Senator **CHAFEE**. So you think it could be?

Ms. **HOPKINS**. It's a possibility, yes. We're looking into that, yes.

Senator **CHAFEE**. Dr. Knauss, do plastics last longer in cold waters? It would seem to me they would last even longer. Is that true?

Dr. **KNAUSS**. I'm not sure, sir. All I know is that they last longer if you get them underwater than they do if you get them up above water. It's the photo-oxidation effect that has a tendency to break them down. Therefore, although we don't like to see them on the beaches, they will degrade on the beaches. If we put them on the bottom of the ocean, we can't see them but they'll take longer to degrade.

Senator **CHAFEE**. Are you aware of any research to increase the degradability of certain plastics?

Dr. **KNAUSS**. No, I'm not. The only thing I did read was something which was the reverse; namely, that the plastic industry has found ways to ensure plastics have even longer shelf life than they presently do.

Senator **Chafee**. How about you, Ms. Hopkins? Do you know anything about that?

Ms. **Hopkins**. Yes. Recently EPA was visited by a group called APROTECT. They have begun a process—it's still in the laboratory. They'd like to develop it for commercial use. They essentially combined starch molecules with polypropylene or polyethylene molecules. They've had some limited success with this. They feel that the starch molecules may lead toward some success in helping breakdown microorganisms. Again, the commercial viability of such products has not been established yet, but there is hope that perhaps the first things that could be made out of this kind of material would be plastic bags, plastic trash bags and other thin film.

They've also assured me that this kind of technology has the ability to be developed into products that have thicker properties than just plastic bags. I asked them if they could make something as thick as a rope or something like that and they think that they will be able to do so.

Senator **Chafee**. Mr. Bendick, you mentioned that Rhode Island discards 600,000 tons of trash; in what time period?

Mr. **Bendick**. A year.

Senator **Chafee**. A year. Are Rhode Island landfills having a problem because of the plastic? I know they're having a problem, period, and it's not all due to plastic.

Mr. **Bendick**. Last year the State adopted—probably the first in the country—integrated, comprehensive system of solid waste management with landfilling resource recovery and recycling. The biggest obstacle in developing the regulations for that system and making it work are plastic because recycling is the key element. They don't fit in any of the elements of the system. They're the biggest problem in incineration because they produce precursors of acid precipitation or in some cases they could produce dioxides through incineration. They don't degrade in the landfill. In landfills traditionally the material decomposes, and plastics don't degrade so they shorten the life of landfills. Recycling is probably the biggest problem because there is not a sound recycling system for plastics today.

One of the things that is happening is that every two months the plastics industry comes out with a new and wonderful plastic which may for its intended use be nice, but because the chemical compositions keep changing, it's very difficult to come up with a recycling technology that gets rid of all that stuff.

Yes, it's a big obstacle in everything we're trying to do.

Senator **Chafee**. Have any of the six New England States made any effort to cooperate in disposal or implementation of laws, banning nondegradable six-pack folders?

Mr. **Bendick**. I'm not aware of any cooperation on that level. Rhode Island and Massachusetts are now in the midst of a joint study for the recycling of plastics where we can analyze the markets and technology for recycling plastics, and that is underway today as a cooperative effort.

Senator **Chafee**. I don't know how you recycle plastics. Suppose you collect them all, what becomes of them next?

Mr. **Bendick**. Well, the hope is to be able to shred them up and make them into—there is a certain kind of plastic that is possible today. Shred them up and make them into a raw material which can be then again used to make the product over again or make other plastic products. There is some of that going on today. Certain types of plastic can be shredded up, reduced to pellets again, and used to make other products.

Senator **Chafee**. That would be encouraging if that could happen.

Dr. Knauss, you said the evidence really isn't there so far to prove that plastics have done any harm to the fishing industry, perhaps to the seal population. Do you see down the road something happening along those lines? I know this would be extrapolating from what evidence you've got.

Dr. **Knauss**. I don't know, sir. Most of the kinds of deaths and mortalities we hear about or see and observe of turtles, mammals, birds, are not because the animals are poisoned—they get entangled; they get plastic in their esophagus and they can't breathe, these kinds of things.

It's not the kind of pollution problem that we're used to where you get the pollutant inside your gut and it has an effect on your metabolic system and your reproduction system.

One of the reasons plastics are with us is they are inert. They don't really change very much, and so they can get in the gut of a fish and they can pass through the gut of a fish.

The evidence, what little I've seen, suggests that the primary problems with plastic that we have today are not the usual kinds of problems we have with pollutants like dioxins and DDT's and PCP's and these kinds of things. Namely, it's their physical presence that is causing the deaths and injuries to the animals.

For example, to the best of my knowledge, there is no evidence to suggest that any of the breakdown of the plastics in the gut of the fish, has caused significant harm to them. Maybe if there is enough plastic in the environment, maybe somebody will come up with some evidence to suggest so, but as far as I know there is no such evidence to date. The only suggestion I found was that somebody pointed out that if you eat enough of this plastic—and somebody said that in some of these areas you find thousands of little pellets per square meter, or something like that. As a fish you can assume that your stomach is full but it's not full of anything very useful. Therefore, maybe you'll starve to death, but it's not the usual kind of a pollutant that you and the rest of us are used to dealing with, sir, where it essentially does damage to the reproductive system of the animal, that sort of thing. At least as of present that seems to be the evidence.

Senator **Chafee**. Mr. Bendick, on the beaches of Rhode Island where you see this trash—you described two examples, the southern part of Block Island and Prudence Island—but say on our commercial beaches, that is, on our tourist attraction beaches, is there any indication that plastic litter has had an adverse economic effect on those areas?

Mr. **Bendick**. After having made a tour of the beaches yesterday, I think there is such a shortage of beaches for the number of people that want to go to them that if the beaches were made of plastic litter, they might still go there. I am being facetious.

I don't know in this part of the country if that is driving people away. It certainly is unattractive and unsightly and diminishes the experience of people out there on the beaches and along the shore, on the bay. It takes away from the feeling they get from going to those places. I think that is very important. I'm not sure whether it drives people away or not. I think it is one of many things which, when we develop shorelines and litter to too great an extent, people look for another shoreline to go to. Unfortunately, in the Northeast there are not any other ones left to go to. I'm not sure it has an economic impact, but I think it has a social impact in that people are supposed to go to the beach and go out to the shore to feel better about themselves and to escape from society. When they see a mess out there, it takes away from that experience and they go back, I think, a lot less happy than they would be otherwise.

Senator CHAFEE. Do you have much of a beach clean-up expense?

Mr. BENDICK. Every one of the State's commercial beaches has to be cleaned thoroughly by contractors every day. It's that much. We have people out there at 4:00 or 5:00 a.m. every summer day, cleaning the beaches with machines. We just bought a machine ourselves because otherwise they can't be adequately used. It's that bad. Every single day the whole beach, every beach must be cleaned.

Senator CHAFEE. What's a beach cleaning machine look like?

Mr. BENDICK. A beach cleaning machine looks like a conveyor belt with a mouth that has a blade that goes under the sand and pulls up; the sand falls through and then rocks and litter, and whatever else, are picked up and put in the basket. It's a very expensive piece of equipment.

Senator CHAFEE. You mentioned Rhode Island's degradable six-pack holder law that goes into effect July 1st. How are you ever going to enforce that? I don't mean you, but whoever is responsible for enforcing it. I don't know who is responsible.

Mr. BENDICK. Well, my understanding is that it requires that anything sold meet those definitions. You don't have to go after the individual consumer. You can go after the distributors and the companies and make them comply. I think it's possible to do that. Several other States have similar laws.

Senator CHAFEE. Usually we find, in a situation like this, that when a series of States enacts laws, the producer comes to the Congress and says, "Look, there is chaos out there. Pass a uniform law for the Nation, so we'll at least know who to respond to. We won't have 50 different entities we're trying to comply with." But that hasn't happened yet. Maybe we'll hear from somebody later on.

Well, thank you all very much. Is there anything else you want to add?

[No response.]

Senator CHAFEE. Thank you very much for coming. We appreciate it.

Why don't we take the next panel which is Ms. Trudy Coxe from Save the Bay, Richard Allen from the Atlantic Offshore Fisherman's Association, and Al Hawkes from the Rhode Island Audubon Society.

I'll tell you what I think we'll do. I think we'll go right through. These panels aren't too long. So we'll stick right at it and won't have any breaks.

Again, I want to thank the prior panel very much.

Let's go in the order we called them.

Welcome, Ms. Trudy Coxe who has such a wonderful job at Save the Bay. She is the leader of certainly one of the most vigorous environmental organizations in our State and active in not only things dealing with the bay, but with the tributaries to the bay. We're glad you're here, Trudy.

STATEMENT OF TRUDY COXE, EXECUTIVE DIRECTOR, SAVE THE BAY, PROVIDENCE, RI

Ms. Coxe. Thank you very much. I was in Seattle all last week and got back late last night to read a newspaper letter to the editor on Saturday in which both of us are referred to as "goose-stepping socialists," and I think that's one of the greatest compliments I've ever had.

Senator Chafee. Well, I like the company, Judy.

Ms. Coxe. Especially to be placed with you, Senator Chafee.

Just for the record, my name is Trudy Coxe. I'm the executive director of Save the Bay. Save the Bay is the largest environmental advocacy group in Rhode Island and southeastern Massachusetts. There are 10,000 members who actively work to preserve and protect the water quality and coastline of the Narragansett Bay Basin.

Someone from the Society of Plastics recently said that almost everything that's in other packaging now is apt to find itself in plastic eventually. I think this prediction reflects a trend that is of growing concern, certainly to us environmentalists and should be of greater concern to all of us.

There is no question that as consumers we are buying, using, and discarding more and more products made of, wrapped in, or packaged in plastics. Consequently, it's no surprise that plastics are emerging as a particularly troublesome solid waste disposal problem.

It's now estimated that over 600,000 plastic containers are dumped overboard from ships into waters every day. A walk along any portion of the Rhode Island coastline confirms that plastics have indeed become the ubiquitous contaminant of our environment. I guess what's most troubling is that some of these pollutants can float on the ocean surface for up to 50 years.

Save the Bay's experience has been that Narragansett Bay is subject to adverse impacts similar to those reported on earlier this afternoon. These impacts include entanglement, ingestion of plastics, and general litter.

One major reason why we so strongly support S. 559 is that little data exists with respect to plastics pollution. We don't know, for example, the number of times that animals have ingested or been entangled in plastics. Conversations, however, with State fish and wildlife officials reveal that reports of entangled animals occur on a regular basis. These officials further suggest that the current number of reports is well below the actual number of animals being affected. Shore birds appear to be most commonly affected with gulls, ducks, and geese frequently becoming entangled in plastic six-pack rings, fishing line, and pieces of netting, among other items.

Gulls have been seen with fishing line and associated debris trailing from their beaks. Entanglement of fish species in discarded nets and fishing gear is also known to be occurring. We are aware of reports of fish, fin fish tangled in nets and fishing line and shell fishermen hauling up quahogs entangled with plastic.

Ingestion of plastics also takes places, as Mr. Bendick has mentioned. A 1972 study done in southern New England waters which found 8 out of 14 fin fish species containing plastic pellets in their digestive systems should be of concern specifically because bottom fish, including the winter flounder, had the highest concentration of ingested plastics. Flounder is our State's most important commercial fishery.

In Rhode Island plastic equals litter. Our own experience in cleaning up the shoreline sadly reveals that the plastics problem is persistent. For the past three years Save the Bay has sponsored a waterfront cleanup of Newport Harbor. A variety of plastics, along with numerous cans and bottles, made up a significant portion of the litter and waste collected.

We believe that S. 559 and S. 560 are steps in the right direction. The Federal Government is long overdue in stepping up its involvement in providing guidance on solid waste management issues. What is most important about S. 559 is that it recognizes that an integrated study of the disposal of plastics on land and in water is needed. We especially support the emphasis that the legislation places on assessing solutions to the plastics problem. We urge that S. 559, the study emphasize ways to reduce plastics contamination at the source and should include economic incentives for developing materials which biodegrade safely in the marine environment, incentives for developing markets for recycling plastic products, incentives to rethink how products are packaged, and revisions to purchasing policies which are more environmentally sound.

Coupled with such economic and marketplace incentives, there must be more vigorous enforcement of existing laws in ocean dumping, pollution control and abatement, and fish and wildlife protection. Such an expanded enforcement effort demands that greater resources—that's money—be provided to the appropriate agencies including the Coast Guard, EPA, and the Department of Interior, so that additional personnel and equipment can be dedicated to better policing of our coastal waters.

In addition to a strengthened enforcement effort, Save the Bay believes that the time has clearly come to implement the provisions of Annex V. The participation of the United States is needed for effective and comprehensive implementation, and there is no reason to further postpone congressional action. Therefore, we support S. 560 and recommend that, again, adequate resource for enforcement be provided to insure positive action.

One element, important element, missing from both bills is promoting greater public awareness about the plastics problem. It's been noted that as much as the problem has been created by individuals, so can it be solved by individuals. However, greater public education is desperately needed. Save the Bay believes that the proposed Federal legislation would be strengthened by an addition of a public awareness education element targeted to appropriate audiences.

It's also clear that Federal legislation alone will not solve this problem. All levels of government can and should be doing more. As Mr. Bendick has mentioned, Rhode Island in 1986 passed a bill which required biodegradable and photo-degradable six-pack rings. Certainly other States should pursue similar measures.

Similarly, programs to require a maximum recycling of plastics should also be encouraged and supported. We are optimistic that Rhode Island's program, the first statewide mandatory recycling program in the country, will effectively reduce the amount of plastics polluting Narragansett Bay and its shores. This program will be implemented through local government action and should be considered elsewhere.

All of the government actions recommended above will be even more successful if they actively involve the private sector in fighting plastics pollution. There are some very good examples of private sector leadership.

Recently the BOC which, Senator Chafee, you mentioned ended in Newport under Mark Shraeder's leadership on his Yacht Lonestar. All competitors committed themselves to safely discarding the plastics at shore facilities. This was a very successful project with Mark's only regret being his sighting of an albatross off the coast of—of all places—Antarctica fouled in monofilament. It is a poignant illustration of how pollution in our own backyards ultimately fouls waters far distant.

To summarize, Save the Bay supports S. 559 and S. 460 as steps toward ending the type of plastics that contaminate our rainwaters. We salute you, Senator Chafee, and the Committee on Environment and Public Works for holding this field hearing and for championing those bills. Our membership of 10,000 individuals, corporations, and organizations stands solidly behind both legislative initiatives.

Senator CHAFEE. Thank you very much, Trudy, for that solid endorsement. I think the point you made about education is good, and, of course, the point you make about involving the private sector is extremely important.

I have a couple of questions for you later, but why don't we go right on now to Richard Allen, who is second on the list.

Mr. Allen, from the Atlantic Offshore Fisherman's Association, thank you for coming.

STATEMENT OF RICHARD ALLEN, VICE PRESIDENT, ATLANTIC OFFSHORE FISHERMAN'S ASSOCIATION, NARRAGANSETT, RI

Mr. ALLEN. Thank you, Senator Chafee.

My name is Richard Allen. I'm a vice president of the Atlantic Offshore Fishermen's Association, a trade association representing commercial fishing vessel operators who participate in the harvesting of most of the major seafood species along the Atlantic Coast. I am speaking here today on behalf of William Palombo, the president of Atlantic Offshore. We appreciate this opportunity to express our views on this important issue.

As a commercial fisherman for 24 years, I have observed the gradual increase in plastic waste in our marine waters. The invitation to participate in this hearing asked the question whether plastic debris has been a problem in fouling propellers, shafts, and intakes of seagoing vessels. That question brought immediately to mind an experience that is my first recollection of plastic in the marine environment being a problem.

Coincidentally, it was 1971, when Dr. Knauss mentioned the first reference in the scientific literature that studied the issue. Shortly after leaving my berth in Point Judith on my first lobster boat, I suddenly found myself being shaken as though King Neptune had grasped the keel of my boat and was making a desperate attempt to shake some sense into me, perhaps to give up fishing as a career. I slowly made my way back to my berth, with a rhythmic shudder accompanying each turn of my propeller.

Back at the dock I jumped over the side to find the new form of flotsam and jetsam that had delayed my day's work. A plastic garbage bag was wrapped around my propeller, creating an impression far beyond what might be expected from its flimsy countenance.

In my experience plastic garbage bags continue to be the most common form of plastic pollution in the marine environment. The increase in the number of plastic bags seen by fishermen, and often recovered by fishing gear, has concerned me, as I am sure it has other fishermen.

As with most issues, however, there seems to be a good side to the plastic bag problem. Lobsters are apparently trying to help us clean up the plastic bags, and it is not uncommon for them to drag them into lobster pots. After they bring the bag in, however, they often can't get out of the pot, which is fine with the lobsterman.

Two additional examples came to mind as I pondered the issue of the testimony and I kept thinking about how much have I actually seen. I can recall one time having to jump overboard in the middle of Georges Bank to get a large towing hawser out of the propeller. The water was pretty cold. I'm surprised it didn't impress me more when I first sat down to write this.

Another time I snagged a large piece of synthetic fish netting in my propeller that, again—and this was 50 or 60 miles offshore—would have required a tow or other assistance. It would have disabled me, but it occurred under weather conditions in which I could go over the side. Luckily, I was able to clear it from the propeller.

It seems to me that just having to think back about all these issues points up another one of the educational processes that a hearing like this brings forth. It just makes people think about things more and go back and consider how much of a real problem it is.

So I have seen at least part of the problem with plastics in the marine environment firsthand. But I have to say that in 24 years of fishing I cannot recall seeing an example of discarded plastics creating a significant threat to marine life. My answer to the question of the seriousness of the effects of plastic pollution on the marine environment, therefore, based strictly on my own observations, without knowing how many turtles might be killed when they mistake a plastic bag for a jelly fish, has to be that the problem appears to be more of an aesthetic or nuisance issue than a biological problem. Again, that's based only on my own observations. I'm not familiar—I know we all have seen the pictures. Obviously these incidents do occur, but I don't believe that I've actually experienced them myself.

The seriousness of the problem, however, really only determines the priority that should be attached to it in comparison with issues such as the loss of fisheries habitat, offshore oil and gas development, toxic waste disposal, and other major problems. Whatever the extent of the problem, the desirability of correcting it remains.

As an industry dependent upon healthy marine resources, fishermen support measures to keep those resources healthy. Controlling and reducing the introduction of plastic waste into our marine waters is such a measure. As an industry also, however, we have been on both sides of the battle as to the appropriate implementation of worthwhile conservation measures. Just as nature creates a balance between prey and predator, there is a need to balance the costs and benefits of any regulatory measure.

Commercial fishermen as a group are probably caused more trouble by plastics in the marine environment than any other group. If given a choice between going back to natural fibers and putting up with the problem, there's no question in my mind that fishermen will continue to put up with the problem.

Once again as an industry we share a dependence on plastics with American industry in general, as well as the American public. Fishing gear, in fact, is specifically mentioned for possible regulation in S. 559 and S. 560. Our concern, therefore, is that a general hysteria over the problem of plastics in the marine environment may lead to unnecessary and unreasonable restrictions on fishing operations and fishing gear. It is our understanding that much of the present concern has arisen because of a specific problem relating to the Japanese high seas drift net fishery in the Pacific Northwest. It is critically important to the viability of the U.S. fishing industry that this specific problem not be generalized in a way that results in measures which reduce the competitiveness of the U.S. fishing industry in the world seafood market.

What measures are appropriate to address the problem? It is my belief that the greatest progress made in controlling pollution in general has been the education of the American public, particularly students, who grow up to be more aware and responsible adults. Beyond that, certainly research on degradable plastics may be helpful in addressing the problem. While this may be an excellent approach for beverage containers, however, it is again a two-edged sword when it applies to fishing gear. One of the main advantages of synthetic fishing gear has been its longevity when compared to natural materials. Making fishing gear degradable may roll back 30 years of progress if regulations are not developed in close consultation with the fishing industry.

I would point out that a number of States are adopting regulations concerning biodegradable panels in lobster traps, largely as a result of concern by fishermen. These regulations have been developed with a high level of input from fishermen and gear manufacturers.

Among the more immediate answers to the problem, I would strongly endorse section 5 of S. 560, which provides for the Secretary of Transportation to take such action as may be necessary to insure the provision of necessary facilities at ports and terminals for the reception or treatment of plastic, garbage, and other items. It is my hope that fishing ports would be included in this program and my belief that such a program would go far in eliminating the contribution of fishing vessels to the problem.

Clearly there is a problem. The study required by S. 559 should provide a better understanding of the extent and the specific nature of the problem. The fishing industry has a vested interest in helping to solve a problem that poses a threat to living marine resources. We would hope, however, that measures taken to correct the problem will be reasonable and responsible, taking into account the possible economic and operational impacts on the fishing fleet.

You mentioned, Senator Chafee, in particular the incentives and possibilities of recovering fishing gear. Again, I would say that the largest concern is not in our area; it's probably in the Pacific Northwest, but there is certainly some concern. To actually go out and recover—to intend to go out and recover lost fishing gear—technically would not be a problem, if someone were to support that kind of activity. That could be done. On the other hand, for fishermen to recover lost gear incidental to their fishing operation when they get snarled in it generally usually results in some safety concerns and things. It may or it may not be practical depending on the particular case at hand. It may be something you can just pull aboard, and we all try to get things like that out of the water because they do cause trouble for us. But in other cases you get into a situation where just with the weather conditions and the safety of the crew, often there's not so much you can do with things like that.

Again, it is a very specific thing, and I think one of my concerns is that we tend to make national solutions to very specific problems that by the time they get down to the end of the true situation, they become quite a burden on individuals that have to deal with them. I would hope that by continuing participation we could avoid that kind of a development.

Thank you.

Senator Chafee. Thank you, Mr. Allen. I want to assure you that we certainly would want to consult with you thoroughly before we do anything that would affect your industry. You're the folks that are deeply involved. We just don't want to pass something that, your industry is not receptive to. There's no way we could ever accomplish anything without your enthusiastic cooperation. You can be sure that we will continue to talk with you folks.

Now we'll hear from Mr. Al Hawkes, who is the executive director of the Rhode Island Audubon Society.

STATEMENT OF ALFRED HAWKES, EXECUTIVE DIRECTOR, RHODE ISLAND AUDUBON SOCIETY

Mr. Hawkes. Thank you, John.

Senator Chafee. What's your title, president?

Mr. Hawkes. Executive director.

Senator CHAFEE. Executive director.

Mr. HAWKES. I still have a boss.

With your permission, I have about four slides I would like to share with you.

Senator CHAFEE. Great.

Mr. HAWKES. I also have a few still photos. All of these slides are through the courtesy of Terry McKinsey of the U.S. Marine Fisheries Service. The still photos you may like to look at or pass around. Again, I suspect all of you have seen this type of thing before, but these seemed like fairly good photographs.

The photograph of the gull you have there was taken from the Block Island ferry last year or the year before, I believe.

Senator CHAFEE. You haven't circled around that same gull many times, have you, Al?

Mr. HAWKES. No, it's a different one.

The Audubon Society of Rhode Island commends Senator Chafee for the introduction of S. 559 and S. 560 dealing with plastics disposal in the sea. We strongly endorse both bills.

It is important to acknowledge that this rapidly-growing problem is now of sufficient concern to the Nation to warrant international cooperation. We do believe, however, that a massive educational effort will be essential to the ultimate successful implementation of either or both of those pieces of legislation.

The Audubon Society of Rhode Island published in its newsletter of October 1970 a photograph of a herring gull from Rhode Island with its head caught in a plastic six-pack holder. We recently had a red-throated loon brought in which had starved to death after being tangled in a small section of plastic fish netting. We have had several reports of Canada geese becoming entangled in plastic six-pack holders. When an area as small as Rhode Island records even a few such instances over time, it is reasonable to assume that the problem is widespread and of significance.

Only a tiny percentage of animal deaths are ever observed or documented in any way. If the problem seems not yet to be critical because whole populations of species are not being decimated but it has the potential for becoming so, then now is the time to take action and not to wait until we have huge die-offs of particular species as a result of the problem.

This is where I'd like to show the slides, if we may.

This was simply a herring that was caught in some debris, in plastic debris, along the New England shore.

This is a harbor seal——

Senator CHAFEE. Could you go back, Al? I missed that first one.

Mr. HAWKES. Yes. If you need detail on these, I believe Terry McKinsey is here and she is the one who took these pictures.

Terry, perhaps you could tell us what that is specifically.

Ms. MCKINSEY. This is just a fish in the herring family that was taken. Actually that picture is from the Long Island area, the Long Island Sound. It was taken by one of our staff members from Connecticut. It had come up in some fishing gear that had small mesh.

Mr. HAWKES. Here we go.

Ms. MCKINSEY. It's a harbor seal from the coast of Maine that happened to get tangled in ropes.

This is an endangered humpback whale that's been entangled in the Cape Cod area.

Senator CHAFEE. What's he got there?

Ms. MCKINSEY. That's the line that the animal was entangled in going across the back of the animal.

That's the humpback whale off of Massachusetts that was entangled in gear.

Mr. HAWKES. Thank you. That's all the slides that we have.

Senator CHAFEE. How long does a whale hold still for those?

Ms. MCKINSEY. Individual variability—of all the humpbacks that have been entangled in New England, more than half have been disentangled through efforts of private organizations. There is individual variability in animals.

Senator CHAFEE. Thank you, Al. Those are good.

Mr. HAWKES. Thank you, Terry, very much.

The society's experience with the coastal plastics cleanup organized in Rhode Island by the Audubon Society of Rhode Island for the last two years was that 267 plus persons walking 48 miles of Rhode Island shoreline collected 5,400 pounds of plastic debris in a three-hour period. We submit to you—and I believe it's with the other material over there—a list of the items collected in the hope that it may convey some idea of the more common plastic debris found in this area.

We have two suggestions for S. 559. One, title I, section 1010(D)3, include the evaluation of deposit systems as one of the incentives to be studied.

Two, title II, section 201(2), expand the definition of a "regulated item" to include food packaging and other plastics which, if consumed by vertebrae animals, would cause digestive impaction.

Thank you.

Senator CHAFEE. Thank you very much.

Mr. Allen, I have a couple of questions. I'm not trying to pin you down personally, but I'm curious.

What does an average fishing vessel that operates out of Gallalee do with all that plastic stuff? In the normal course of events, would they just heave it overboard or what happens?

Mr. ALLEN. Plastics that they might take in the groceries and things like that?

Senator CHAFEE. That's right. They've got bottles of ginger ale, a plastic ginger ale bottle or a plastic milk container, which is pretty bulky. Once it's empty, it gets in your way every time you turn around.

Mr. ALLEN. I would say that in my experience there was probably a gradual change where at one time everything was thrown overboard because the further you go back in time, the less of it was plastic, so it probably wasn't that much of a problem. As we've gotten more and more plastic in that kind of use, I think more and more people have started to realize, hey, this stuff doesn't just go away; the water doesn't just soften it up and it doesn't disintegrate. There's probably a much larger percentage bringing things ashore now than there were. I know I went through that transition on my own boat, and sometimes some of the crew members you have to get after them a little bit because they have been used to throwing things over.

I think the fleet as a whole is probably in an era of transition from discarding things at sea to bringing them ashore. One of the biggest issues is: what do you do with it when you get to shore? Facilities for disposing of the waste that you bring ashore are certainly needed. I think that was a good part of the legislation.

I was with a fisherman from California just yesterday and mentioned to him that I was coming to this hearing and what the issue was. The first thing he said was, "Well, what they've got to do is the States have to have facilities in the areas where the boats can dispose of things." They bring them ashore and if they can't, then they're going to take the easy alternative. That's kind of the status of that situation now. It's one that is changing all the time. It's an educational process as well as having the facilities.

Senator CHAFEE. What did you mean in your testimony when you referred to this problem? You said, "Among the most immediate answers to the problem"—what do you see as the problem?

Mr. ALLEN. I think just plastic being there is a problem. For the fishermen, as I pointed out, getting fouled up in the plastics, I think one of our biggest concerns is we run into a piece of floating synthetic warp or a floating webbing. Another thing that I didn't mention was something that comes up in the intake pump. That's another common problem. Some of these things we kind of get used to because we live with them all the time, so they probably don't impress us too much. We've got an awful lot of things to deal with, so the fact that we have to take the strainers out of our pumps on a daily basis to clear them of plastics and whatever else might get in them, we don't tend to think about too much. But when you stop and think about it, it is.

I think there is a lot out there—a lot of people thinking more and more about the amount of plastic.

Senator CHAFEE. You mean you're way out off Georges Bank and your pumps would suck up plastic?

Mr. ALLEN. They do on occasion, yes.

Senator CHAFEE. You go for what, a three-day trip?

Mr. ALLEN. That's what I do.

Senator CHAFEE. Would it happen once a trip, just out of curiosity? Is it quite a common problem?

Mr. ALLEN. I would say if once a trip you get some kind of plastic, that might be a reasonable—especially on a lobster boat where we have a live well in the hold. It's a little bit different than some of the other fishing boats. We have to take special care to keep the strainers unclogged. There's a lot of things out there besides plastic, but plastic certainly is one of them, plastic cups or plastic bags.

I think plastic bags are probably the thing you see the most. That's one of the things that bothers me: particularly if people are throwing things overboard, if they take everything and put it in a plastic bag first and then they throw the whole plastic bag overboard, that's probably the worst thing they could do.

Senator CHAFEE. I think one of the points that has been made in the testimony heard today is that plastics is not just a concern of the marine environment; it's a concern in the land disposal environment. Plastics just won't degrade. We're creating a lot of problems for ourselves downstream as we create more and more of these plastics.

Al, have you noticed in your cleanups, is it getting worse, the same, or better?

Mr. **Hawkes**. I think it's getting worse, certainly progressively—we've only done the cleanups themselves for the last two years, but I've spent a lot of time on the beaches in Rhode Island over the last 30 years, and it certainly is worse now than it ever has been. There is more of the trash just, again, by observation. The variety is greater. The size of particles is smaller now. You can see more and more little pieces of trash, which worries me more than the big trash in many cases.

Senator **Chafee**. I must say I worry about the pellets because it seems to me the birds would flash down and pick them up.

Mr. **Hawkes**. I don't know that it is so much the birds. I think it's what's going on underwater that we can't see that bothers me more than anything because the point I made in my testimony is that wildlife can disappear at an enormous rate and we never realize it because we do not find most of the dead individuals; we never see them. We get an occasional big fish kill and we'll have dead fish washed up on the beach, but that's not what happens ordinarily. Ordinarily the things die and they disintegrate before anyone ever sees them.

It's the same on land. You never see dead birds or you seldom do. We realize that they must die on a daily basis by the tens of thousands, and yet you seldom see on. Again, it must be even more so in the ocean than it is on land simply because it's a more pervasive environment.

Senator **Chafee**. Ms. Coxe, could you describe to us the mandatory recycling program that Rhode Island is going to have? I'm not sure I know exactly how that's going to work.

Ms. **Coxe**. Well, the legislature several years ago passed a mandatory recycling program which will launch Rhode Island as the first State in the country to require every resident to separate his or her garbage. Right now the State is working very closely with six communities. It's going to be a staggered program. Six communities will have programs in effect at the end of this year, most probably the beginning of next year. Cranston is one; East Grenwich, Johnstown, North Kingstown—that's four—East Providence, and one other which I will think of in a second.

The reason that it was decided to stagger the programs was to give the State an opportunity to figure out what some of the weaknesses of trying to launch it were. We had a meeting recently with Mayor Trapacante on how do you distribute 27,000 of these bins to every household in Cranston. It's a monumental undertaking for any mayor to consider doing and getting off the ground.

But the real issue is that at some point in the future your garbage simply won't get picked up if it is not separated. Right now the law requires that garbage, just plain old garbage, be separated with cans separate from bottles, separate from newspaper, separate from paper. There's now some discussion taking place as to whether or not plastics will be included in that required list of things to be separated out.

The thing that held the State back in terms of requiring that plastic be separated out is that there isn't a market for the plastic to be taken to right now. As Bob mentioned, there is some study being done on markets for recycling plastics. It's expected that that will be one of the contaminants or pollutants in the garbage stream that will be required to be separated out. It's a monumental program and if it works in Rhode Island, I think it will be a tremendous statement to the country and will show that, indeed, individuals can do a large part in cutting back on the pollution problems that we have from garbage.

Senator CHAFEE. In every home in Rhode Island, are people going to put bottles in one place and cans in another and garbage in another, paper in another?

Ms. COXE. That's right; and eventually we hope plastics.

Senator CHAFEE. That's terrific.

What do you mean by greater public education is desperately needed? What can we do? Do you mean about the adverse effects on the environment?

Ms. COXE. I think not only about the adverse effects in the environment, but also about what citizens as individuals can do to reduce their loading of trash that they're creating in general. I think we have a long way to go. Maybe you have to do it through required programs such as the mandatory recycling program in Rhode Island, but it certainly seems that we should be able to do it with good, solid public education as well.

Senator CHAFEE. An individual is so handicapped. He goes in to buy some carrots and he gets them in a little plastic bag. He goes in to buy blueberries, blueberries have a plastic cover over the top of the box. It's fortunate the box itself isn't plastic. Milk comes in a plastic carton. It's pretty tough to be discriminating if everything you get is plastic.

Ms. COXE. Well, I think one of the aspects that we like about S. 559 is that it will further analyze ways in which the manufacturers can reduce their use of plastic materials, which would consequently, then, lead to fewer plastics being around. I think Dick mentioned that we don't want to label everything as a national problem when sometimes things are locally created and could be locally solved. One of the things that we've learned in developed a mandatory recycling program in the State of Rhode Island is that when all is said and done, Rhode Islanders have very little control over how some nail manufacturer packages his nails or how some fast food restaurant packages its food. I think we need to have much more attention, and I think it can be done partially through education, on getting people, getting the manufacturers to cut back on what they are generating to begin with. I hope that that would be an aspect of, if not S. 559, something that Congress would begin to look at very quickly.

As a citizens' group, I can't turn around and say to the Bostich Corporation, "You should begin to put your staples in nonplastic containers." It's just not going to happen that way.

Senator CHAFEE. Do you think if we had a bottle bill, it would help?

Ms. COXE. Well, I think that the real—I think right now we will learn a lot about whether bottle bills alone—with Rhode Island's mandatory recycling program, I think we're going to achieve the same thing that we would have with the bottle bill. I think we will be certainly much better off than we were before, and there's a lot of discussion—would it have been better with a bottle bill, would it have been better with a mandatory recycling program. I don't think we're going to know, but at least we have something in place that I hope will change things around.

Senator CHAFEE. Mr. Allen, Trudy Coxe mentioned the high incidence of plastic foam in the bottom fish, flounder and so forth. Has this affected the catch or the marketing of the flounder?

Mr. ALLEN. Not to my knowledge. Of course, the plastic would be in the gut, and the gut would be discarded with nobody except the scientists probably realizing that the plastic was there.

There has been a recent decline in the flounder population, but it's difficult to tell whether that's a natural, cyclical problem or a pollution concern other than plastic, or whether the plastics play any role in it. I just don't know.

Senator CHAFEE. Okay, anything else anybody wants to add?

Mr. ALLEN. I had one question as I was thinking about the fishermen bringing everything ashore, and the question popped into my mind whether they would put it into a receptacle that the city of New York would put onto a barge that would take it back out there and dump it in the ocean.

It's not clear to me whether New York uses barges strictly for sewage disposal or do they take solid wastes and dump it offshore? I know there is still a substantial amount of legal offshore dumping going on. It seems like that question should be addressed so as not to be counterproductive.

Senator CHAFEE. I'd say touché on your part.

I don't know the answer to all that, but I do know, as I said, I think all these hearings are valuable, at least to me. It makes ones mind focus on certain things. This, as I said, isn't just a marine problem, and as Trudy was saying, it's now a land disposal problem. If the stuff won't disintegrate, we've got a peck of problems around here.

Mr. ALLEN. I'd also say that the fishing industry I think is going to be one of the targets of this effort, and we certainly are receptive to playing whatever positive role we can in getting at this problem. We're concerned. We don't want to be looked at as the bad guys that are creating the problem and people not understanding exactly what the specific nature of the problem is, but we'd really be happy to work with the States, the Federal agencies, whoever, to get at it and try to do our share in taking care of it.

Senator CHAFEE. Okay, we'll take you up on that.

Thank you all very much. We appreciate you all coming.

Now while Ms. Rogers, from the Society of Plastics Industry, comes up I'm going to step out for just a minute.

[Brief recess.]

Senator CHAFEE. The subcommittee will resume.

Our next witness is Margaret Rogers, congressional liaison, Society of the Plastics Industry.

We're delighted you're here, Ms. Rogers. If you've got a comment or two to make or a statement, we'd be glad to hear it.

STATEMENT OF MARGARET ROGERS, CONGRESSIONAL LIAISON, SOCIETY OF THE PLASTICS INDUSTRY

Ms. Rogers. Well, I found it very interesting listening to the testimony offered today. The plastics industry certainly recognizes concerns about plastic litter, and we have begun efforts, a few which were commented on today, to attempt to deal with some of the problems identified.

I think it's important, though for the different groups that are focusing on the plastic litter problem or debris problem to recognize there are some key different issues involved. For example, a lot of it focuses on litter, aesthetics, and possible harm to the economy and tourist areas. Then there is a discussion of the solid waste landfill problem and landfills running out of space.

I think in any discussion of recycling litter—plastics are only now about 7 percent of the landfill. I think it should not be assumed plastics are the cause of landfills running out of space. That's about to happen in a few years, I understand from EPA's statistics, in half the landfills around the country.

The problems, I think, with landfills and solid waste disposal are broader and should be viewed in a broad context, and solutions should be considered from a very broad perspective. For example, it seems that incineration may be the best solution to the landfill problem when there is no longer landfill space, particularly in urban areas in the Northeast. Some more emphasis should be placed on incineration and identifying the problems with incineration—are there or are there not air pollution problems and, if so, then address the air pollution problems by requiring additional control equipment or properly-designed incinerators.

Some interest was expressed today in making more plastics degradable. That is certainly a possible solution in some areas, and our industry has begun to look at that as a matter of interest. I believe Ms. Hopkins from EPA mentioned we (SPI) are having a symposium next week on plastics and degradability where we are reviewing the state of research in the industry. In fact, we sent out a call for papers internationally, and it's a symposium, Senator, at which you will be our keynote speaker to talk about your interest in the issue of plastics.

It will be at that symposium where attendees will hear the state of the art of research in degradability, be it photo- or biodegradability, and also the constraints. For example, a lot of the litter problem that has been talked about is packaging. However, we have great concerns about whether or not packaging could be made degradable because packaging has to be very safe. It may not pass FDA requirements. If you make a material weak enough to degrade, you may in fact allow contamination of the food or drink inside. That's the kind of thing that has to be kept in mind.

There was a suggestion today that perhaps the solution to the litter problem is to ban plastics or the solution to the landfill crisis is to ban plastics, but I wonder, because of the small percentage, the relatively small percentage of plastics, it doesn't seem to me that that's the solution. That's why my very first thought was that people looking at the litter problem or the entanglement-ingestion problem should really try to retain a broad focus on the issues. I think if the focus becomes very narrow, sure, you could ban plastics, but that's not going to solve the solid waste problem.

Anyway, those are some thoughts I had.

Senator CHAFEE. Thank you. I don't think that anybody is suggesting banning plastics. Most of us recognize plastics are here and perform a very useful function. Here I am having a glass of water out of a plastic cup. The problem in the landfill comes, not so much, from volume, and recognizing that we can accept your statistic, which I assume is right—7 percent by volume, the problem is that it won't degrade; it stays there. Other things do degrade.

Our real concern is trying to arrive at something that will degrade. We're not talking about something that's going to degrade as soon as the sunlight hits it.

By the way, what's the difference between bio- and photo-degradable?

Ms. ROGERS. Well, photo, as the word implies, is broken down by reaction with the sunlight. Bio is actually enzymes eating the plastic, so that plastic in a landfill, for example, would not photo-degrade because it would be covered up, not exposed to light. Plastics in a landfill that were biodegradable, then, would be eaten up by the bacteria or the enzyme reaction.

Senator CHAFEE. Is there any suggestion that you can come up with a plastic that is biodegradable?

Ms. ROGERS. Well, there are some now in limited applications in the agricultural arena. There is biodegradable plastic sheeting to go over certain crops, but most—or perhaps all—biodegradable plastic is starch based and, therefore, it would not be able to be used in applications that most plastic is used in today. There would be very limited applications.

For example, if you've had sutures, you may have had sutures, they are biodegradable usually, internal sutures. They dissolve in your body.

Senator CHAFEE. But you couldn't make a plastic cup or a plastic bottle biodegradable?

Ms. ROGERS. Generally no. I must tell you—I'll be upfront—I'm not here to explain the technical chemistry of plastics because plastics is rather complex chemistry. You heard some discussion today by one of the witnesses on it, that different kinds of plastics—and there are very specifically different kinds of plastics and each has a different molecular structure and different properties.

Senator CHAFEE. What's been the response of the plastics industrys to individual States enacting laws dealing with degradability of six-pack holders. Rhode Island for example, the law goes into effect July 1, 1987. What have we done?

Ms. ROGERS. I think when Rhode Island passed that law, you became the 11th or 12th State to have that requirement. As a society, we have not become involved in that issue. Two of our member companies make that particular resin that is used for the ring connector, and we felt it was really up to those companies to determine the position. Our understanding is they did not oppose that legislation in any State. They have customers who buy from them the ring connector, and it just so happens that that resin exists for that particular application, and we remain neutral on the issue.

Senator CHAFEE. Is that photo- or bio-?

Ms. ROGERS. That's photo-degradable.

Senator CHAFEE. And they're going ahead and doing it? There are 50 States out there, 39 of them with no law, 11 with it. Are they making them all the same, or don't you know?

Ms. ROGERS. I was interested in your reference earlier to industry asking sometimes for a national requirement because of differing State regulations. In this instance, though, it doesn't happen to be that great a problem because if the company sells the product to a customer, then that customer could be selling in several States.

For example, in the Northwest I believe one or two of the States have the requirement for the photo-degradable connector. Well, it just so happens, then, that all the States in the Northwest are probably selling products with the photo-degradable connector because all the shipments of whatever soft drink go out to the Northwest, not just to X State. It's not a major problem. It costs a little more, so the consumers are paying a little more.

Senator CHAFEE. You mentioned developing incineration facilities for plastics, but we've got problems with that.

Ms. ROGERS. Well, I heard the comment earlier, and I think there's a lot of false information about the byproducts of plastics when they burn. The plastics industry supports incineration really as the ultimate solution to the solid waste problem. As you probably know, plastics are basically pure petroleum. They're made from petroleum and they have a very high BTU value. We think it makes most sense to really use the BTU value in plastics as a resource for energy.

One thing you lose when you make plastics degradable is you lose the BTU value because that plastic is being broken up and going into the ground. You are able to get the BTU value out of that plastic by putting it in an incinerator and turning it into energy.

Senator CHAFEE. You say there's a lot of BTU value there?

Ms. ROGERS. Oh, extremely high.

Senator CHAFEE. Are there any toxic byproducts that come out of it?

Ms. ROGERS. Well, in combustion, as you probably know, in all combustion, there are toxic byproducts. I really don't know where the fear started that plastics produce more toxic byproducts than other materials—for example, natural materials such as wool or wood or paper, when they burn. We don't have any information or evidence that plastics produce more. The fact is when all materials burn they produce toxic byproducts.

One thing, in the literature I have read about incinerators. There seems to be one fact that is critically important, and that is that incinerators—it is critical that they be properly designed and a part of that proper design is to have a very high burning temperature. It's important—again, speaking as a nonscientist——

Senator CHAFEE. You're not doing too badly, I'd say.

Ms. ROGERS [continuing]. In combustion high temperatures are required for complete combustion, and in complete combustion you end up with fewer toxic byproducts. The best incinerators are those that burn the materials at very high temperatures, and they're the safest.

Senator **Chafee**. If you can have a degradable plastic six-pack holder, why can't you carry that much further; the cup you and I are drinking out of? I can't believe that that is going to affect the water if it's degradable.

Ms. **Rogers**. I must tell you I think that's an excellent question, and it's certainly the natural conclusion. The unfortunate thing that the degradable ring connector has done for the plastics industry is to raise expectations of the American public to solve all of these different problems with degradable plastics.

I can just say that it has to do with the complex chemistry of plastic. We will find in our seminar next week that there is quite a bit of research going on in industry now. However, you have to recognize that the resins in the laboratories now being looked at as possible degradable material would be new resins, and all of the plastics in our lives today are made from resins that have now been around for, by and large, 20 to 50 years. It would only be if these new resins are appropriate for the wide variety of applications today.

Let me point out one other thing. When we talk about plastics, sometimes I think it creates an impression that all plastics end up out on the beach, but the overwhelming majority I think—our numbers show something like 75 to 80 percent are plastics that are made for long life, be it in building construction, in your appliances, as parts of your automobile, as your sailboats. It's only a small percentage that goes into those products that end up in the litter stream or, unfortunately, are discarded improperly by individuals after their short useful life.

That's something else to keep in mind when you look at biodegradability or photo-degradability requirements there is an increased cost. You don't want to force that increased cost on the American consumer for products that are never going to end up disposed of improperly.

This is why it's important in things such as your bill for studies for policymakers to really have a very clear idea of the problem before solutions are applied broadly.

Senator **Chafee**. Well, we definitely want to do that. I think obviously there is a difference between the sailboat that's made of fiberglass or plastic and the celery bag that is going to be thrown and discarded and end up either in a landfill or on a beach or in the water somewhere.

Is there a significant difference between the degradable and the nondegradable so far? You mention that the six-pack holders in the Northwest States costs a little bit more.

Ms. **Rogers**. The difference in price.

Senator **Chafee**. But is there a decline in price as the volume increases? There must be.

Ms. **Rogers**. I cannot answer that question, but I'm sure we could give you that information. I'm sure the producer would be happy to give that to you.

Senator **Chafee**. Tell us about this conference next week.

Ms. **Rogers**. Pardon?

Senator **Chafee**. Tell us about the conference. Are they going to be tackling these particular problems?

Ms. Rogers. Well, as the level of awareness has increased, really for our industry, the plastics industry, it started last year when Congress started looking at the issue of entanglement and ingestion. Our own level of awareness has been raised, and in response to that, being educated about some aspects of the problem by some of the environmental groups, we have gone back to industry and said there is something of a problem out there. In response, we have begun to educate our own industry that improperly-discarded plastics are causing problems to some marine and wildlife, and that one of the possible solutions is to have more degradable material, more degradable product.

In response to that, we decided to have—basically this could be considered an international symposium on plastics and degradability. We're going to be learning next week what's out there, what industry is doing, what individual companies are doing. So it's really going to be an educational symposium. It is actually a technical symposium where individuals are going to come and say, "My company is doing this kind of research and this is what we think this particular kind of resin"—resin it's called, the raw material—"can do and here's some possible applications."

Senator Chafee. What do you recommend for us to do to keep their feet to the fire?

Ms. Rogers. Well——

Senator Chafee. How about a nice congressional law?

Ms. Rogers. Several people today mentioned education, and I think—I know it's great fun for legislators and lawmakers to make laws; right?

Senator Chafee. Well, it's not always as much fun as it seems, but it does get people's attention.

Ms. Rogers. Yes. I think what we have been doing has accomplished a fair amount in a short period of time. Of course, that is industry's favorite approach. Nobody likes unnecessary laws and regulations. Industry doesn't. You've heard the commercial fishing industry representative say the same thing.

Our companies are very much in the business of doing business. They respond to the marketplace. If the consumers are saying they don't want a certain kind of product, then the industry I think tries to respond to that.

Also, being in the marketplace, innovative companies respond to demands. If they see a consumer demand for products that will do something like degrade, then I think those efforts are going to be accelerated. I think efforts have probably been accelerated quite significantly during the last year since Congress, since you in fact happened to be the first Member of Congress to make some public statements on this a year ago.

Senator Chafee. The trouble we find—and this isn't unique with the plastics industry; we find it with CFC's—chlorofluorocarbons—the industry says to us, Look, we have to respond to the marketplace. We have to peddle our product and if we come out with something that is—let's say in the plastics, if we come up with a milk bottle that's biodegradable or photo-degradable but costs more, then the milk company won't buy it. Thus, we have to continue with the less expensive and nondegradable milk gallon jug. That's the way the American system works, except if somebody gets in, then, and says, "You've got to come up with a degradable jug, and you can do it and, as a matter of fact, we're going to tell you to do it."

Otherwise, it will never come about because when people buy milk jugs, there isn't a tendency for them to say, "By the way, is this thing degradable?" The ALMAX fellow or Safeway says, "Well, I don't know. I'll write the company and ask." Meanwhile, you can't wait for that answer; you grab the thing and go through the checkout lane.

We're very interested in what can be accomplished and not just to pass laws for the fun of passing laws, but I think most of the environmental steps that have been made in the country have come about because Congress has pushed the manufacturers to do it. We never would have had the reduction in the consumption of gasoline if we had not mandated the automobile manufacturers in this country to get 18 miles a gallon in the next year, 20 miles a gallon in the next. They wouldn't have done it because the demand wasn't there at the time.

I think we ought to know what we're doing before we mandate things, but at the same time I think it's optimistic to think that either the public is out there saying, "Give me a degradable celery holder" or that the manufacturer is going to do it voluntarily.

Ms. ROGERS. Well, I certainly understand where your question is coming from, and it would seem that you're very right in these dramatic instances of pollution control and some other things. I also appreciate the analogy to CFC's because I happen to be very involved in that issue.

Senator CHAFEE. Frequently, if we put the pressure on, the price will come down. In the CFC situation, with the aerosols, in 1978 EPA banned aerosols for shaving cream containers and the like. Now the price is competitive. In Europe they haven't done it, and they're still using freon, chlorofluorocarbons there, and destroying the ozone layer.

In the U.S. they don't use CFCs in aerosols because that is the law. I wasn't around, that was before my time, but I suspect that the companies involved saw a lot of problems and yet the demand was made that they do it, and they did it. They did it successfully and brought the price down.

Ms. ROGERS. Well, I think in this instance, in all of these areas we're dealing with chemistry and technology. I would just caution that we can't make analogies, always make analogies from one to the other. In this instance, when the interest started growing in degradability we started as an industry trying to work with the staff on Capitol Hill to help them understand the complex chemistry of plastics and how you wouldn't be able to make a degradable plastic necessarily just because there was a law requiring it.

I think, again—let me remind you I'm not prepared today to talk to you about the chemistry of plastics, but I think it is a little more complex. We will be working with you in the future. In fact, I am here today to speak on behalf of our association. We will be looking forward to that opportunity when you have a hearing in Washington.

I think again all I can say is the best thing we can do is to work with you and others interested in the issue and recognize the real limitations involved because of the natural laws of chemistry and physics, and then deal with what options are available.

Senator CHAFEE. Well, we'll have other hearings, as you pointed out, and we'll get the industry people and look forward to your society for their help in deciding what groups to get.

Thank you very much for coming here today.

As each of the witnesses has pointed out—Mr. Allen, Ms. Coxe, Mr. Hawkes, and each of them—there is an education in process. Mr. Allen made a pretty good point: when these fishermen carefully save the stuff and bring it home and put it in the container, which is then loaded on the barge and taken out to sea, we're not getting very far.

Ms. ROGERS. A very good point, I agree.

Senator CHAFEE. We want to thank you.

I will point out that the reception the other day in Newport for the around-the-world sailors who had saved their plastic containers, was sponsored by the Environmental Education——

Ms. ROGERS. The Center for Environmental Education.

Senator CHAFEE [continuing]. Center for Environmental Education and the Plastics Society Industry, paying tribute to those sailors.

Ms. ROGERS. One final note on that: that particular instance, our association has been working with an environmental group, the Center for Environmental Education, in a joint education effort. Again, just to emphasize how important that is, as several of the witnesses did today, we have ads going into some magazines within a few months, magazines in the fishing industry and some others, to talk about proper disposal and care of products. Again, we think that is the first step to solving the problem.

Senator CHAFEE. Well, I think it is. One of the points they made, these fellows who made those extraordinary trips, the point of it all was, look, if they can save their stuff on a 30-day trip in the most primitive conditions—Trudy referred to one of them as a yacht. Trudy, you were generous. Those things are—they're not much yacht-like if you look below. Have you looked below in one of those? Oh, boy, they all seem to run out of money when they get the topside finished. If they can do it, some fellow going out for an overnight cruise or a day cruise with his family in Narragansett Bay ought to be able to save these plastic containers.

Okay, thank you all very much.

Ms. ROGERS. Thank you very much.

Senator CHAFEE. I want to thank our stenographer and everybody for coming. Thank you.

[Whereupon, the subcommittee recessed to reconvene at the call of the Chair.]

[The following was supplied for the record:]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN - 1 1987

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Improper Disposal of Nonbiodegradable Plastic Materials: An Environmental Concern

Introduction

The disposal of nondegradable plastics in marine and estuarine environments has recently become a concern, both nationally and internationally. A growing body of evidence indicates that when plastic materials are discharged, lost or abandonded in the oceans, these materials may adversly affect marine life and coastal communities. Although various national and international statutes and regulations presently exist to outlaw the disposal of wastes at sea, legal ambiguity, the lack of provisions devoted specifically to plastics dumping, and the difficulty of enforcement have prevented a satisfactory solution to the problem. Meanwhile, the presence of plastics in the marine environment continues to grow. It has been estimated that as many as 639,000 plastic containers per day are dumped worldwide by ships. Plastic debris is rapidly accumulating from other sources, as well, as more and more domestic items are manufactured from plastic.

The chief problem with plastic debris is that unlike most other kinds of wastes, plastic materials, as currently manufactured, do not degrade over time. Plastic debris items may persist in nearly intact form for decades or perhaps centuries. Thus, improper disposal of large quantities of nondegradable plastics constitutes a persistent and growing source of pollution.

The Environmental Protection Agency (EPA) recently commissioned a study from the Center for Environmental Education (CEE) to investigate the issue of plastic wastes in the marine environment. CEE conducted an in-depth review of all existing literature, reports and survey information related to the problem of plastic debris. CEE consolidated information on the types and quantities of this debris, its sources, both land- and marine-based, and the potential effects it has on wildlife and coastal communities. Based on the CEE report and on work from other environmental groups and government agencies including the National Oceanic and Atmospheric Administration (NOAA), EPA has concluded that the adverse effects associated with the disposal of plastics at sea are sufficiently well documented and of sufficient magnitude to warrant serious consideration.

Types and Quantities of Plastc Debris

Plastic debris that enters the marine environment has been categorized either as manufactured plastic articles or as raw plastic particles. Manufactured plastic articles include those items that have been fabricated into consumer products such as commercial and recreational fishing gear, packaging materials, bags, bottles, sheets, six-pack yokes, and styrofoam cups.

Of the manufactured articles entering the marine environment, fishing gear, in the form of gillnets, trawlnets, traps, buoys, ropes and monofilament fishing line is some of the most prevalent. NOAA has estimated that roughly 139,000 metric tons of fishing gear are lost annually. Plastic strapping bands and sheeting from ship's cargo are items that have also been frequently reported as plastic debris.

Raw plastic particles, which are synthesized directly from petrochemicals then used to make plastic articles, may enter waterways via outfalls from manufacturing plants or through loss from ships, particularly when cargo is loaded or unloaded. The plastics industry is unable to estimate the magnitude of the loss of the premanufacture plastic particles to the environment, but the widespread presence of plastic pellets reported in coastal waters indicates that releases could be substantial.

Sources of Plastic Debris

Although plastic debris may be generated both on land and at sea, researchers believe that much of the plastic trash found in the marine environment and on coastlines comes from ocean dumping. While accidental release of plastic items to the ocean contributes to the debris problem, deliberate disposal at sea may be a more important source. Research groups attribute unauthorized ocean dumping of enormous quantities of waste largely to a lack of alternative means of handling shipboard wastes. Grinders, compacters and incinerators are costly and, in many cases, impractical to have on board ship. Furthermore, many port facilities for disposal, both in the United States and abroad, are ill-equipped to handle the wastes from vessels that have stored large quantities of garbage on board. Merchant ships, the U.S Navy, and passenger ships are all major contributors of plastic wastes.

Commercial fishing operations are guilty of disposing of plastic materials at sea, as well. Since the early 1960's most fishing gear has been made from plastics because of its durability, leight weight and low cost. Fishing gear may be lost accidentally due to gear failure, operational mistakes or storms. But deliberate release because of convenience or when foreign fishing vessels cut loose fishing gear to avoid Coast Guard detection of illegal fishing activities is, apparently, not uncommon.

Oil rigs, although legally prohibited from dumping wastes, nevertheless are the source of large quantities of plastic domestic items and equipment that turn up on shore-lines and beaches. Common littering adds to the problem. Los Angeles beachgoers alone are reported to leave behind 75 tons of trash every week, much of it plastic.

Plastic wastes are sometimes discharged from sewage treatment plants combined with storm runoff systems which, during times of heavy rainfall, may carry the trash out to sea. Other land-based sources include industries responsible for synthesizing plastic particles. Sediment samples taken from rivers below outlet pipes of plastics-manufacturing factories have contained plastic pellets in concentrations of approximately 2,000 pellets per cubic centimeter. Collection of plastic pellets in such densities suggests that these pellets were directly discharged into the river system.

Environmental Effects

Plastic debris in the oceans and on shorelines harms wildlife and consititutes an enormous and persistent litter problem. Although it is difficult to accurately reckon the numbers of marine animals killed each year by plastic trash, researchers estimate that hundreds of thousands of marine mammals and birds die each year because they become entangled in or ingest plastic materials. Many of these animals are on the endangered species list.

Hawaiian monk seals, for example, have frequently been reported entangled in discarded fishing nets. Studies indicate that the Northern fur seal population of the Pribilof Island in Alaska is declining at an annual rate of four to eight percent per year, due largely, it is thought, to entanglement. Animals that become entangled in nets, plastic stapping bands, anchor or float lines may stangulate, drown or be prevented from catching prey and slowly starve.

When sea turtles become entangled in such items as net fragments or monofilament fishing line they are often rendered unable to swim, feed or surface to breathe. Thin wire-like fishing line can cause lesions or necrosis of flippers. Fishing-related debris has been reported as the cause of sixty-eight percent of all entanglement of sea turtles including the endangered green, loggerhead, hawksbill, olive ridleys and leatherback turtles. Turtles are also known to ingest plastic bags and sheeting mistaken for one of their favorite items of prey, the jellyfish. Animals that ingest plastic fragments may suffer blocked digestive tracts, ulcerations, loss of appetite or strangulation.

Over fifty species of seabirds have been reported to ingest plastic debris, often in the form of raw plastic pellets. Many young seabirds have been found to have plastic in their stomachs or gizzards, pellets that were possibly fed to them by their parents. Seabirds are also subject to entanglement in monofilament fishing line and in six-pack yokes. The entanglement of brown pelicans, a protected species, in monofilament fishing line is a major problem in California and Florida. Several species of birds have been sited with their necks caught in the rings of plastic six-pack can connectors. Young birds are sometimes trapped in plastic debris interwoven with nesting materials.

Fish and crustacean populations are affected by "ghost fishing". Fishing nets and traps may continue to catch fish and sea animals long after the gear has been lost or discarded. For example, 1500 meters of a lost gillnet retrieved in the North Pacific contained ninety-nine seabirds, two salmon sharks, one ragfish and seventy-five salmon. In Lake Superior, a half-mile of nylon net was retrieved during a study and found to contain over one hundred pounds of fish. The net was estimated to be fifteen years old. Lost traps can continue to catch lobsters, crabs and other crustaceans indefinitely and may be a factor in the depletion of these valuable commercial stocks.

The litter problem caused by plastic debris has resulted in costly damage to coastal communities. Some beach communities have reported large economic losses from drop-offs in tourism and have required large-scale beach clean-up efforts due to unsightly debis, much of it plastic. Coastal municipalities in New England, the New York Bight and Chesapeake areas, several South Atlantic States, Texas, the North Pacific, Alaska and Hawaii have all reported significant litter problems from plastic debris. Padre Island National Seashore in Texas provides an example of the costs incurred from debris deposited beyond the Seashore's jurisdiction. In 1985, 140 tons of trash were reported for a fifty seven mile stretch of coastline. Sampling studies indicated that about ten percent of the litter came from beach users. The remaining ninety percent had been washed ashore from the Gulf of Mexico and consisted primarily of plastic items associated with merchant shipping, and the oil industry. The litter included such things as large plastic sheeting, plastic computer rings, drilling pipe thread protectors, hundreds of plastic milk jugs and even hard hats. The cost of clean-up of approximately one-half mile of beach was estimated at about ten thousand dollars.

The problem of plastic litter is not limited to heavily populated areas. A recently published magazine article noted that plastic bottles, sheeting and styrofoam cups have been found on the remote beaches of the Beaufort Sea off arctic Alaska. A plastic toy, disposable lighters and plastic pellets were recently picked up on a small island one thousand miles northwest of Honolulu.

Recommendations for Potential Solutions to the Problem of Plastic Debris

A number of groups studying the issue of improper disposal of plastic wastes have made suggestions for reducing the problem: These recommendations include:

1. Increase research efforts to develop degradable plastics that can be used in commercial products.
2. Implement recycling programs where feasible.
3. Control the release by industry of raw plastic pellets to the marine environment.
4. Develop improved shipboard facilities for handling wastes.
5. Improve port facilities for handling wastes.
6. Strengthen legal authorities aimed at controlling plastics dumping and improve enforcement of existing regulations.
7. Conduct further research on the effects of plastic trash on marine species.

Ongoing Activitities

Many of the broad recommendations listed above will not be easily achieved. But efforts are already underway by a number of government agencies, environmental groups and the plastics industry to address the environmental problems caused by plastic trash. NOAA has developed a Marine Entanglement Research Program to investigate the source of plastics that are found in the oceans and along coastlines. They have also established an education program to increase awareness of the adverse effects caused by unauthorized plastics dumping and the release of fishing gear. NOAA, aided by the Marine Mammal Commission, is conducting further research on the adverse effects plastics cause to marine species.

The U.S. Coast Guard has directed thier efforts chiefly toward supporting ratification of Annex V of MARPOL, the international regime aimed at preventing unnecessary and uncontrolled discharges of pollutants from ships into the world's oceans. Annex V offers the potential for establishing more stringent and enforceable discharge requirements for garbage, including plastics, than currently exist under U.S. law.

EPA commissioned the comprehensive study of the types, sources and effects of plastic debis in the marine environment. The agency is providing support to research groups by giving expert review of research proposals and reports on recycling, the development of degradable plastics and on environmental effects studies. EPA is also a member of an intra-agency workgroup formed by NOAA to provide a forum for the exchange of information on the plastic debris issue.

Efforts to mitigate the problems caused by the accumulation of plastics in the marine environment are not limited entirely to government agencies and environmental groups. The Society of Plastics Industry (SPI) has begun a plan to heighten awareness of the problems that resin pellets can cause to marine life and is encouraging member companies to reduce the liklihood of pellet release to the environment. SPI is hosting a seminar devoted to the plastics debris issue in early June and has invited all interested groups as well as representatives of the plastics industry to attend.

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"Almost everything that's in other packaging now is apt to find itself in plastic eventually." This prediction by a spokesperson for the Society for Plastics Industry reflects a trend that is of growing concern to environmentalists and should be of greater concern to us all. There is no question that as consumers we are buying, using and discarding more and more products made of, wrapped in or packaged in plastics. Consequently, it is no surprise that plastics are emerging as a particularly troublesome solid waste disposal problem.

The adverse effect of plastics in the marine environment is of special concern. It is now estimated that 640,000 plastic containers are dumped overboard from ships into marine waters every day. A walk along any portion of the Rhode Island coastline confirms that plastics have indeed become a ubiquitous contaminant of our environment. While we cannot offer specific data on the amounts of plastics in the Narragansett Bay ecosystem since such data is not to our knowledge available, Save The Bay believes very strongly that plastic pollution does pose a serious problem for the Bay and our marine waters globally. The adverse impacts of plastics on

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marine life have been well documented by organizations such as The Center for Environmental Education (CEE). Their recent report, "Plastics in the Ocean: More Than A Litter Problem" (Feb.1987) contains a detailed description of and clearly establishes the harm caused to marine wildlife by plastics. Save The Bay's experience has been that Narragansett Bay, located primarily in Rhode Island, is subject to adverse impacts similar to those reported by CEE. These include entanglement, ingestion of plastics, and the general litter problem, among others.

With respect to the problem in the Narragansett Bay region, detailed numbers on the frequency of entanglement or ingestion have yet to be collected. Anecdotal evidence, however, indicates that Narragansett Bay marine life and other wildlife are vulnerable to the hazards posed by plastics in the marine environment. Conversations with state fish and wildlife officials reveal that reports of entangled animals occur on a regular basis. These officials further suggest that the current number of reports is well below the actual number of animals being affected. Shorebirds appear to be most commonly affected with gulls, ducks and geese frequently becoming entangled in plastic six-pack rings, fishing line, and pieces of netting among other items. Gulls have been seen with fishing line and associated debris trailing from their beaks. In one case, an osprey, a threatened species, became entangled in monofilament fishing line. Fortunately, the bird's predicament was reported and officials were able to intervene and save the osprey with the help of a veterinarian's care.

Entanglement of fish species in lost or discarded nets or fishing gear is also known to be occurring. While the full extent of the problem is not well understood, fish entanglement is undoubtedly taking place in Narragansett Bay, a heavily fished estuary. We are aware of reports of finfish tangled in nets and fishing line. Shellfishermen also have reported hauling up quahogs entangled with plastic. Commercial and recreational fishing activities are both suspected of contributing to the problem. Other marine species which utilize the Bay for critical habitat include otters, seals, sea turtles, and endangered whales and dolphins. Plastic debris poses life-threatening hazards to these air-breathing species as well.

Ingestion of plastics is also a serious concern. Although information specific to Narragansett Bay is very limited, a 1972 study done in southern New England waters found 8 out of 14 finfish species examined contained plastic pellets in their digestive systems. Bottom fish, including the winter flounder, had the highest concentration of ingested plastics. This is of particular concern for Narragansett Bay because the winter flounder is an extremely valuable commercial fishery.

The plastics pollution problem also makes itself evident via the constant onslaught of debris on our beaches and shoreline. The sources of these plastics are many, including the beachgoing public, the tens of thousands of recreational boats that navigate the Bay, the fishing industry, commercial shipping, the U.S. Navy, and combined sewer overflows among others. Regardless of the source, discarded plastics contribute to the debris that fouls our shores, degrades the Bay's water quality and impairs all the recreational uses of the Bay which we so value in this, the Ocean State.

Our experience in cleaning up the shoreline sadly reveals that the plastics problem is persistent. For the past three years, Save The Bay has sponsored with local groups, a waterfront cleanup of Newport Harbor. A variety of plastics, along with numerous cans and bottles, made up a significant portion of the litter and waste collected. Residents with waterfront property who participated in the cleanup complained that despite their efforts to keep their beach areas clean, the tides and winds continued to deposit more plastics.

What can be done to curb the plastics pollution of bays and oceans? Save The Bay believes that S. 559 and S. 560 are steps in the right direction. The Federal government is long overdue in stepping up its involvement in providing guidance on solid waste management issues. We must keep in mind that the pollution of the ocean by plastics is only one part of the broader solid waste management problem. S. 559 recognizes this by requiring a study of the disposal of plastics on land and in water. This integrated approach to the problem makes sense and offers the best chance of identifying, designing, and implementing a long-term solution to the plastics pollution problem. We support the emphasis the legislation places on assessing solutions to the plastics problems. We believe that this Federal legislation is sorely needed to provide the mandate to carry out this work. To date, government agencies which currently have authority to address and enforce the plastics pollution problem have not effectively exercised it because they have been severely constrained by inadequate funding and personnel and chronic lack of commitment to this important enviromental issue.

The study proposed by S. 559 should emphasize ways to reduce plastics contamination at the source. This will require a multi-pronged approach which should include economic incentives for developing materials which biodegrade safely in the marine environment, incentives for development of markets for recycling plastic products, incentives to rethink how products are packaged and revised purchasing policies which are more environmentally sound.

Coupled with such economic and marketplace incentives, there must be more vigorous enforcement of existing laws on ocean dumping, pollution control and abatement, and fish and wildlife protection. Such an expanded enforcement effort demands that greater resources be provided to the appropriate agencies, including the Coast Guard, EPA, Department of Interior, NOAA/NMFS, and others so that additional personnel and equipment can be dedicated to better policing of our coastal waters.

In addition to a strengthened enforcement effort, Save The Bay believes that the time has clearly come to implement the provisions of Annex V to the International Convention for the Prevention of Pollution from Ships (MARPOL). Over a dozen nations have ratified Annex V, but the participation of the United States is needed for effective and comprehensive implementation. There is no reason to further postpone Congressional action on Annex V. S. 560 which would implement Annex V deserves strong support. Once ratified, the success of Annex V will depend on developing better mechanisms to enforce its regulations. Again, providing adequate resources for enforcement will be essential to insuring that S. 560 has an impact on the problem.

One important element missing from S. 559 and S. 560 is promoting greater public awareness about the plastics problem.

It has been noted that as much as the problem has been created by individuals so can it be solved by individuals. However, greater public education is desperately needed. Save The Bay believes the proposed Federal legislation would be strengthened by an addition of a public awareness/education element targetted to appropriate audiences.

It is also clear that Federal legislation alone will not solv this problem. All levels of government can and should be doing more. At the state level, Save The Bay supported the passage of requirements for biodegradeable and photodegradeable six-pack rings. Rhode Island passed such legislation in 1986. All other states should pursue similar measures. Similarly, "bottle bills" that mandate the recycling of containers, including plastic soda and milk containers, should be adopted nationally. Programs to require a maximum recycling of plastics beyond these containers should also be encouraged and supported. Save The Bay is optimistic that Rhode Island's program, the first statewide mandatory recycling effort, will effectively reduce the amounts of plastics polluting Narragansett Bay and its shores. This program will be implemented through local government action.

All of the government actions recommended above will be even more successful if they actively involve the private sector in fighting plastics pollution. Private sector initiatives should be encouraged particularly in the areas of public education and public awareness.

Very good examples exist of such private sector leadership - by individuals and citizens groups. Recently, the BOC Single-handed Around the World Challenge ended in Newport. Under Mark Schrader's leadership on his yacht LONESTAR, all competitors committed themselves to safely discarding their plastics at shore facilities. This was a very successful pilot project with Mark's only regret being his siting of an albatross off the coast of Antarctica fouled in monofilament. Doomed by needless pollution, this poignantly illustrates how pollution in our own backyards ultimately fouls waters far distant. Another example from Newport, Project OSTAR, under Mame Reynolds' leadership, has enabled over 300 schoolchildren to understand these important environmental issues that they as adults must be committed to solve.

To summarize, Save The Bay supports S. 559 and S. 560 as steps toward ending the tide of plastics that contaminates our marine waters and we salute Senator Chafee and the Committee on the Environment and Public Works for holding this field hearing and for championing both bills. Save The Bay's membership of 10,000 individuals, corporations, and organizations is solidly behind these legislative initiatives.

CONTROLLING AND REDUCING POLLUTION FROM PLASTIC WASTE

TUESDAY, JULY 7, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Asbury Park, NJ.

The subcommittee met, pursuant to notice, at 9:30 a.m., in the Asbury Park City Hall, Asbury Park, New Jersey, Hon. Frank R. Lautenberg, presiding.

Present: Senator Lautenberg.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Good morning. It is good to be with you this morning here in Asbury Park. I am sorry that we are delayed in starting, because we have a lot of ground to cover and I do have to be back in Washington.

Senator Pallone was delayed, but he is on his way, and we hope that he will be able to join us very soon.

We are pleased to welcome all of you, and in particular the witnesses who have taken their time to be here. We are delighted to see members of the community come in because we believe this is a problem concerning everybody. One doesn't have to be from Asbury Park to love the beaches. One doesn't have to be from a coastal community to understand how important our shoreline and beaches are to us.

Today's hearing is going to focus on a key environmental problem for New Jersey; that is, the protection of our coastal areas from plastic pollution.

Earlier this year I introduced the Plastic Pollution Control Act of 1987, S. 633. This bill responds to a pervasive threat to our coastal communities. A threat to our beaches and oceans.

Most of us have seen plastic pollution first hand. The recent beach closings in Ocean County are not unrelated to this problem. Miles of our coast were scarred with tampon applicators, condoms, and other floatables.

We've also seen hospital wastes, such as used syringes, on our beaches. We've seen six pack rings. We've seen plastic containers.

We've seen it, and we know what it means to our economy and environment. Our tourist industry depends on clean beaches. About $7 billion a year flows into New Jersey from coastal tourism activities. And in our densely populated state, we need adequate recreational facilities for our own citizens.

We want our beaches to be clean, and our tourist industry to thrive. Existing law has not been effective in preventing plastic pollution of our oceans and shores.

It's a problem for tourism, for swimmers and recreational boaters, for our fishermen, and for our marine and wildlife which choke or strangle on plastics.

Where does it come from? One place is the Fresh Kills landfill on Staten Island. Garbage, including disposed plastic products, such as hospital wastes, is carried out to Fresh Kills on barges. The garbage has been allowed to fall into the water from the barges, and from the landfill itself. This refuse then washes up on New Jersey's beaches, and pollutes our waters.

Other possible sources include ships at sea. They produce large quantities of plastic refuse and other garbage.

And recent questions have arisen about ocean dumping. Are floatables being allowed to remain in sewage sludge?

Last September on the beaches of Sandy Hook, 100 New Jersey environmentalists walked our beaches and collected plastic litter. Cindy Zipf, who organized that effort, is here today.

In a little over an hour, just 15 of the "trash attackers" picked up a giant haul from one of the beaches: 700 plastic containers and six-pack rings, 600 plastic tampon applicators and other refuse. When the effort was over, the group had filled a flatbed truck with garbage—80 percent of it was plastic refuse.

Evidence continues to grow about marine animals entangled in plastic debris and marine animals that have swallowed and choked on plastic junk. Here in New Jersey, staffers at the Marine Mammal Stranding Center in Brigantine found a dead sea turtle that had ingested a plastic bag. Bob Schoelkopf, the Center's Director, will testify today about the many tragic animal deaths he has witnessed.

Birds, and even great whales have become victims of plastics carelessly discarded into the ocean. Virtually every marine species is susceptible to the dangers of plastic debris.

Despite such evidence, plastics continue to be dumped. In the Northern Pacific Ocean as many as 250,000 birds and 30,000 northern fur seals are believed to die each year from plastic entanglement.

That is the problem. But what is the solution? We have laws on the books—the Refuse Act of 1899, the Clean Water Act, and the Ocean Dumping Act. But they weren't designed to address this kind of plastic pollution.

We have an international law. It's Annex V to the International Convention for the Prevention of Pollution from Ships.

But it has not been ratified by the United States. I hope that the Senate will act promptly on Annex V. Ten of my colleagues on the Senate Environment and Public Works Committee recently joined me in urging the Foreign Relations Committee to ratify the agreement.

But even if the United States ratifies the Annex in this session of Congress, it won't take effect for several years.

So there's a gap in our pollution laws. My bill would close it. It would ban the disposal of plastic products—all the way out to the 200 mile limit.

It would prohibit plastic disposal on beaches and landfills, when plastic products could be washed out or blown into the water. It would explicitly cover plastic pollution stemming from the Fresh Kills landfill, and other common sources of plastic pollution.

Violators would be subject to stiff criminal and civil penalties. The bill allows citizens and local officials to sue to enforce the law.

We'd also have EPA study ways to eliminate plastic pollution. Can we use alternative products? Would labeling help. How about degradable plastics?

The bill also mandates a comprehensive public awareness program about plastic pollution. Finally the bill would implement Annex V.

With this bill we can take an important step toward cleaning up our beaches, our waterways, and protecting our wildlife and marine species. We can take a major step to protect the economy of New Jersey's coastal communities.

New Jersey has won some important victories in protecting our waters. One key one was mandating the closing of the 12-mile sludge dump site. Today's witnesses will provide us with the latest on the progress in closing that site. They will also tell us what's being done to monitor ocean dumping.

We've barred new entrants, such as Boston, from the 106-mile site. Put a sewage cap on New York City, if it fails to comply with court orders to stop dumping raw sewage into our waters. Earlier this year, the Congress also overrode the President's veto of the Clean Water Act. This legislation will bring about $650 million to our State in the next eight years to build and upgrade sewage treatment plants.

Enactment of plastic pollution legislation is an important complement to these earlier initiatives. Today's hearing is the second in a series on plastic pollution being held by the Senate Subcommittee on Environmental Protection. The first hearing was held in Rhode Island. I expect that the Subcommittee will hold a third hearing in Washington, hopefully this summer, before moving toward consideration of the bill.

I am pleased the Subcommittee has permitted me to take testimony from officials and concerned citizens in New Jersey so that it can be considered as we move this legislation forward. I thank all of you for coming today and I appreciate the willingness of our witnesses to participate in the hearing.

Again, I want to thank all of you for coming, and I appreciate the willingness of our witnesses to participate in the hearing. A fact that we neglected to mention in our opening statement is that this material doesn't degrade; it's possible that it will last hundreds of years, and all it's doing is accumulating in quantity and threat.

We are pleased to see Senator Pallone here. We invite him to the witness table. We welcome also Sam Addeo, who is the city manager of Asbury Park. Sam and I, before the hearing started, were reviewing some photos that date back to the 1940's. Probably everybody in the audience was too young to remember that period, but I remember it. From the photos, one can see how nice the beaches were in those less complicated days. I am hopeful that with everyone's cooperation we can return it to its former, almost pristine state.

I would like to note that the record for this hearing is going to remain open for 3 weeks so that anybody who wants to submit something for the record can do so.

Also, I would like to remind our witnesses of the need to summarize your testimony. We have a timer here. It's set for 5 minutes. The full text of your written statement will be placed in the record. We won't punish you severely if you run a minute or two over, but if you start to run five minutes over, we are going to have to gavel you down in the interest of expediting the hearing.

So as chairman of the Senate Committee on Coastal Pollution, Senator Pallone, we are pleased to welcome you here. You have distinguished yourself as a vigilant champion of our coastal waters, and Mr. Sam Addeo, who is the city manager of Asbury Park, has worked very hard to keep the town's coastal economy moving forward. We had some interesting words in the conference room, and I hope, Sam, you will make some reference to that.

You both continue to demonstrate the kind of commitment and leadership that is necessary to contain the pollution and, I might add, many of the other challenges that face our State today. We thank you for coming, and we invite you to give us our testimony.

Senator Pallone, if you would like to go first.

STATEMENT OF HON. FRANK PALLONE, NEW JERSEY STATE SENATE

Mr. PALLONE. Thank you, Senator Lautenberg.

First of all, I wanted to thank you not only as chairman of the Senate Special Commission on Coastal Pollution but also as an elected official in Monmouth County. As you know, my district basically consists of coastal towns, and I know that your bringing this subcommittee here today does mean a lot to us, the fact that you have brought it to Asbury Park. We do appreciate that and also appreciate your continued leadership on environmental issues, not only ocean pollution but toxic wastes and the other concerns that I know you have expressed. I am very pleased to see that now you are in a leadership position in the Senate on those issues.

Senator LAUTENBERG. That makes two of us.

Mr. PALLONE. I just wanted basically to focus on two areas of concern. One of them, of course, is the question of disposable plastics and the problem of plastics washing up on our beaches, and then generally talk briefly about disposal of sewage sludge from municipal and regional sewage authorities.

Senator LAUTENBERG. Can everyone hear Senator Pallone back there? No. Okay. There is an old political joke that says you're fortunate if you don't have to hear a politician. But you are here today because you want to hear.

So, Senator Pallone, I would encourage you to speak more directly into the microphone.

Mr. PALLONE. This is the microphone, I suppose, for amplification? All right. I will just talk louder.

Senator LAUTENBERG. How about pulling them both closer?

Mr. PALLONE. I think we had better talk louder.

Senator LAUTENBERG. Yes. The room is small, and if you speak up, they will be able to hear you now.

Mr. PALLONE. All right. Let me say that there are two issues that I would like to address today. One is the question of the plastics and particularly the disposable plastics, many of which are washing up on our shores, and the second one, of course, is the disposal of sewage sludge which is coming from municipal and regional sewage authorities.

You mentioned our special committee, our Senate Special Committee on the State level, that deals with coastal pollution, which held a hearing most recently in Trenton on June 16. That hearing was particularly timely, I thought, because only two weeks prior to that, in Ocean County, a number of the beaches were closed because the sludgelike material had been washing ashore, actually, within a 32-mile stretch of Ocean County. At our hearing we did have officials from the New Jersey Department of Environmental Protection who testified that the material that was washing up on the beaches at that time at the end of May most likely originated or passed through the sewage sludge dump site located just 12 miles off the coast.

Senator LAUTENBERG. Senator Pallone, I am going to ask you to hold up a minute, and we will give our friends here a chance to set up. Then we will have the proper record. Just bear with us a minute because I think if we can get the sound a little clearer, that would be better. This is like Senate time, Senate time is always a little bit later than regular time.

[Recess.]

Senator LAUTENBERG. Senator Pallone, thank you. Your testimony up to this point was so interesting that I would like to hear it again and we would give you a chance to start right from scratch. We would not charge you any time on this.

Mr. PALLONE. All right.

Senator LAUTENBERG. Senator Frank Pallone.

Mr. PALLONE. Thank you, Senator. I want to address two issues. One is the plastics and the other is the question of the continued dumping of sewage sludge at different sites off the coast of Monmouth County in particular and New Jersey in general.

As I said, at the most recent hearing of the State Senate Special Committee on Coastal Pollution, which was held on June 16 of this year, that hearing was particularly timely because we were investigating the problems that resulted from the closing of Ocean County beaches that had occurred at the end of May.

It was stated by officials from our State Department of Environmental Protection at the hearing that they felt that the material which caused the beach closings in Ocean County which had washed up either had originated in the 12-mile sewage sludge dump site or had passed through that site on its way to the beaches. I mention that because I think it's important that we stress the fact that right now we are in that transitional period where the 12-mile sludge dump site is being phased out and being replaced by the 106-mile site off the coast of southern New Jersey.

One of the things that I want to stress today is that our first task should be is to ensure that the deadline, the December 31, 1987, deadline for all that sewage sludge to go the 106-mile site, that that be met and that all sludge dumpers without any exception and without any exemptions be required to go to the 106-mile site by the end of this year.

However, I also want to emphasize that the use of that 106-mile site is intended to bean interim measure for 5 years, and I think that we have to stress that we cannot allow ourselves to begin thinking of this as a permanent solution to our sludge disposal problems. Although it is in deeper water, although it is further away from shore, the fact is that ocean dumping in general is not an environmentally sound disposal alternative.

Furthermore, there is the continued question which was raised because of those beach closings in Ocean County at the end of May, whether or not we can monitor the sludge barges effectively that are going to the 106-mile site. There seemed to be some concern that the barge or whatever that caused the beach closing in Ocean County may have been a barge that was supposed to be going to 106 and instead was dumping at the 12-mile site.

So what I am suggesting is that several measures need to be taken at both the Federal and State level to address the concern to make sure that the 106-mile site is eventually closed and to make sure that there is proper monitoring of the barges that go there.

Now, you know that the Federal Government right now has designated the 106-mile site for this 5-year period, until March of 1991. One of the requests that I would make is that the Federal Government, either through legislation or by regulation, prohibit sludge dumping at the 106-mile site after March of 1991.

I would mention that I have introduced a bill at the State level that would prohibit New Jersey sewage authorities from using that site at the end of the 5-year period. But as you know, we are also concerned about New York and whether or not New York and New Jersey stop is going to be dependent ultimately on the Federal Government.

Two other initiatives are necessary to strengthen the enforcement and monitoring of sludge dumping. Perhaps the most important is for the EPA to require as a condition of permanent approval electronic surveillance equipment to be operational on all vessels transporting sewage sludge for ocean disposal.

These are the famous black boxes that you have heard of. Basically, we would like to see the Federal Government require those black boxes on all barge vessels going to the 106-mile site. I have mentioned that I have introduced a State Senate resolution that would call on the EPA to do that, but that is something that is within the Federal Government's jurisdiction and would have to be done by Federal legislation or regulation.

Something that the State could possibly get involved in, and this is something that I have introduced on the State level, is to make it possible for the New Jersey DEP to increase its role in monitoring vessels which ocean-dispose sewage sludge emanating from New Jersey sources. Again, this would require our own State DEP to either trail the vessels going out to the 106-mile site either by an accompanying vessel or having someone on the barges themselves.

Again, that is a bill that I have introduced on the State level, but I do think we need increased monitoring, and we could have that kind of onsite monitoring, physical monitoring also by the EPA if they were interested in getting involved with that. I would urge that the Federal Government do that.

Hand in hand with the monitoring is we do need more vigorous enforcement and legal advocacy to take action against those who are guilty of dumping, because if we find somebody who is guilty of dumping illegally and enforcement isn't taken against them and fines are not made stiff, then it really isn't going to do us any good.

Now I want to get into the second issue, which is the plastics. This is the type of pollution that we can see and that is very unsightly and becomes a problem for bathers in particular because they see the plastics. I don't have to tell you the problem. You know that the beaches in many cases are clogged with debris such as tampon applicators and plastic containers and bottles, et cetera, all over the beaches in many cases.

I know that you have introduced a bill, S. 633, which makes it a Federal crime to improperly dispose of plastic products in our waterways. I think this is a very important mechanism to address this problem, and I certainly would like to see it passed.

I also wanted to mention a bill that I sponsored in the Senate, in the State Senate, to ban the sale of certain personal care items such as plastic disposable tampon applicators, the disposable diapers and cotton swab sticks. This bill is still in committee, and there is a lot of industry opposition to it. But I think that we also need to address the question of plastic disposables at the manufactured level. We cannot just say, well, they're being manufactured and there must be some way of containing it. Sure, we want to do that, but at the same time I think we also have to look at the issue of whether they should be manufactured at all.

I personally think that if there is a biodegradable alternative for some of these products, there is no need to manufacture them, and we should encourage other States, and perhaps even the Federal Government, to adopt legislation that would prohibit their manufacture.

There is also another bill I have sponsored on the State level that would do a study of plastics and other floatable debris and their sources in the New York-New Jersey metropolitan area. One thing I wanted to stress that the committee has done and I know you have been concerned with is Fresh Kills. Fresh Kills, I think, is one of the major sources of the plastics and other debris that comes and washes up on our beaches. You may know that Woodbridge Township—I think you have also been involved with this—has brought suit against New York City. Our committee was influential in getting the attorney general to join that suit. I am hopeful that that suit will eventually result in some action to either close Fresh Kills or provide some sort of containment for the debris. I think it is unrealistic for us to expect it to close. But certainly, certain mechanisms can be put in place to avoid a lot of the debris from coming ashore.

The other thing I wanted to mention which a lot of people do not think of in this context but I think is important is the need for the so-called bottle bill, the deposit on bottles so that they are returned. You know that we do have this in Connecticut and a number of other States. I think that this could have a two-pronged effect on reducing the clutter on beaches, first because people would be less inclined to throw containers away and probably many people would pick them up to redeem them, but also because I think the bottle bill would have a long-range effect on reducing the production of plastic containers in favor of recyclable materials. I know this is something that is very controversial, but I think it's very important that we move in that direction.

The only other thing that I wanted to mention, because I know the time is short, is to urge you and your fellow Senators—and I know that you do support this—is to ratify Annex IV to the Marpol marine pollution international treaty, which would restrict the dumping of plastics at sea. As you know, even though there are 26 Nations that have signed this annex, it is not binding on any of them, but if the United States and a lot of the other major shipping Nations would ratify the Annex IV, it would become binding on all.

So I think that is another thing that is very important. I know again that you have been in the forefront of trying to get that ratified, and I would hope that the United States Senate would take the leadership on that issue.

In conclusion, I just want to say that all of New Jersians share a profound concern for the environment, and I think this transcends party lines and it transcends all geographic boundaries. Our concern for the ocean and for the coasts is not only one that local representatives share but people from throughout the States share. I think that the future of New Jersey is tied in to the tourism industry and it's also tied in to the elimination of ocean dumping and having beaches that are clean and that we can all enjoy.

I just want to thank you again for coming down here. A lot of times I think that you are a voice in the wilderness on these issues on the Federal level. Keep up the good work.

Senator LAUTENBERG. Thank you very much, Senator Pallone, for the admonition and for your very, very constructive suggestions and proposals.

[Applause.]

Senator LAUTENBERG. The issue is taken very seriously. We are pleased to say we are not a sole voice in the wilderness on this. There are other Senators, from coastal States who are very much interested in this kind of legislation. So are some of the representatives from interior States because they recognize that the ocean is a precious part of the United States and whether one has access daily as some of us do or access occasionally, we all want to see it kept clean.

There is something about the ocean that commands the attention and affection of people around the world. Concern for whales and other sea life is just beginning to be manifest in a serious enough way so that everybody feels it. When we saw the three whales returned to the ocean off the coast of Massachusetts, I think everybody was applauding because the sea belongs to those precious animals, and we want to see them protected.

We also don't want to have to worry about walking on the beach and picking up who knows what as you go by. In addition to the filth, there is a danger that people sense about these things.

Thank you, Senator Pallone.

Mr. Addeo, the city manager from Asbury Park.
Please proceed, Mr. Addeo.

STATEMENT OF HON. SAMUEL ADDEO, CITY MANAGER AND CHIEF EXECUTIVE OFFICER, ASBURY PARK, NJ

Mr. ADDEO. Thank you, Senator. First of all, on behalf of the residents of Asbury Park and the mayor and council, I would like to welcome you here. The work that the subcommittee is doing is very important to those of us in Asbury Park and to all of us in coastal Monmouth County. Our concern for the protection of the ocean is obvious.

I am here today to lend support to the bill on controlling plastic wastes in the ocean. Here in Asbury Park, as I said, and in Monmouth, we are far removed from much of what goes on on the Hill in Washington, D.C., but it is a very real problem for us, and not so much a technical one. I am here today as a nontechnical witness. My appeal is basically emotional. I have grown up on the shore.

Many of the people who visit here on a regular basis know that there is something radically wrong with our oceans. As you said you were here as a young man. You have to know that there is something wrong with the ocean off this shore. It has become choked with pollutants of every description—and some that we haven't even found names for yet. On any given day the shoreline might be covered with dead fish killed by something dumped by some unseen barge, littered with all sorts of debris, including plastic bottles, six-pack holders, or tampon applicators, or covered with some noxious substance that washed up at high tide.

This particular area of the United States is particularly cursed. The past few years, as you know, the New York bight area has been the receptacle for the chemical wastes and toxic pollutants of the northern New Jersey and New York industrial—I don't know whether to call them a complex—industries. Sewage sludge has been shipped to sites offshore for dumping in certain areas which have suffered greatly.

Of course, New York City, which boasts of being the cosmopolitan center of the northeast, has yet to find a way of getting rid of its garbage and raw sewage without spreading it halfway to Cape May. The impact is great. There is an economic impact. I think all of the beaches along the shore, the New Jersey shoreline, this year are off from a business standpoint. Beach fees are down. In Asbury Park beach fees are down substantially over last year. I think the fear that first surfaced about the quality of the ocean is filtering down to the people who use that resource. And I think—I don't have a scientific study done on this because the returns aren't in yet—I think people are afraid to go into the water. This is going to increase.

Quite frankly, I don't blame them. All one has to do is take a trip to Sandy Hook, go to Horseshoe Cove, put a snorkling mask on, and I defy you to see your hand in front of your face. The shoreline of Sandy Hook is covered with all sorts of the debris that I named before.

Besides the economic impact, besides the unsightliness and the obvious health concerns, there is a psychological impact that those of us who live at the shore feel. We are losing a resource, and we know deep down inside that although we are taking some steps and we are making actually great strides in the past few years to try to correct the situation, we are concerned that it might not be enough.

We feel that if one were to simply take a walk along the beach, say from Ocean Grove or from Point Pleasant north or south, you would see a picture that would not have been accepted a few years ago. I am a certified scuba diver, and since 1984 I have made over 100 dives in the Caribbean. Routinely, visibility is over 100 feet. Unfortunately, off the coast of New Jersey we sometimes measure visibility in terms of inches.

On any given day there are swimmers bumping into floating objects that obviously are not being generated locally. They are coming offshore. Two days after a northeast wind, we can almost time the inflow of plastics, of debris, and sometimes the dead fish coming out of the north.

So I am here today to not only endorse this bill but to ask you to continue the work of the committee. I would urge you to continue asking the public what they see as the problem. They are at times an excellent barometer of what is wrong with our resources, particularly the ocean in this area. We have people here who have spent 30 years working at the beachfront. They can tell you about pollution. They can tell you about erosion, and they can tell you what a jetty will do to a beach. At times I am more impressed with what they tell me than some of the experts, which is another concern I have. You pass legislation in Washington, and in fact most of our legislation is fairly simple, straightforward, and easy to understand. There is obviously attendant verbiage to talk about its implementation. Once it is given to agencies to implement, there seems to be an uncontrolled desire to pass regulations. I think the Senate, the House, and other legislative bodies have to monitor that legislation very carefully and see that we are not creating administrative giants but rather attempting to correct a problem.

I think that this bill is a perfect opportunity to correct a problem that is correctable. You know, there are a lot of things wrong with the water, but anyone can walk along the beach and see the plastic debris that is washing up on it. I believe it is correctable.

I also agree with the Senator's contention that we should find a degradable substance with which to make most of this. The elimination of six-pack rings is not going to set back civilization in our time.

Above all, I urge you to remember that some of what we do to ourselves cannot be undone. I am sure you know that, and it is going to be said here many times. Our resources are not unlimited. The mechanisms that exist in Nature to rectify these imbalances are very easily taxed, and many of the objections to what is put in place to protect the environment come from people that say it is not economically feasible. It was not economically feasible to go beyond the 12-mile site. It's not economically feasible to go any farther out than 106 miles or to dump sludge in Pennsylvania or other places across the country or find a suitable way to dispose of sewage sludge. It's going to have to be, because eventually we are going to have to pay a far greater price to correct the problems.

Thank you very much, Senator.

[Applause.]

Senator LAUTENBERG. Thank you very much, Mr. Addeo. We appreciate your testimony, especially when you talk about a scuba diver or snorkler being able to see objects a hundred feet away at one time, and now bumping into them before they know that they're there. Maybe someday we will have a sonar that goes on a face mask and you can avoid floating objects just by listening and you can close your eyes. We won't be able to see anyway. Well, we are very interested in the comments that you made.

Senator Pallone, the initiatives that you have taken at the State level are very important, and we urge you to continue to do some of the things that you mentioned. But I just wanted to be sure about your view as to whether or not Federal legislation ought to be pursued.

Mr. PALLONE. Oh, I think so. I think that in many cases, Senator, the State Government or the State initiatives which I mentioned would really be better if they were done on the Federal level and certainly more effective, and I guess a lot cheaper for New Jersey as well. So really, almost everything, whether we talk about, for example, with the enforcement mention was made of the black boxes or the need to monitor sewage sludge vessels, that would be most effectively be done by the EPA.

Senator LAUTENBERG. It certainly could not be handled entirely by the State of New Jersey.

Mr. PALLONE. No.

Senator LAUTENBERG. Especially if we want to go out to 200 miles.

Mr. PALLONE. Exactly.

Senator LAUTENBERG. Which is what we've got to do in order to make this effective. And it does not, certainly, preclude any action by the State to initiate a protection plan. The same thing, I think, can be said about Annex 5. For the benefit of the people sitting here listening, Annex 5, again, is an amendment to an international treaty on the control of plastic discharge in the oceans. However, even if the United States ratifies it, we will still be below the tonnage level necessary to implement this law. About 50 percent of the world's shipping tonnage must be signed up via their various countries in order to have this treaty become operative.

So, even if the United States joins, we are still a couple of percentage points below what is needed. There is no reason, in my view, why the United States shouldn't have its own laws, why France shouldn't have theirs, and the U.K., and the Soviet Union. All of those countries that have coastal representation ought to have their own laws. We can't legislate for them, but if everybody takes an active part in it, together with this international agreement overlaying it, that, to me, is the way to solve the problem. You were very clear on what you thought about the monitoring, and we needn't go into that.

On the biodegradable materials, there is a lot of interest there. The one thing that we don't want to do is to create another condition that perhaps alters the chemistry or the biology in the ocean, and we ought to make sure that we study those problems thoroughly. If we can eliminate that, certainly that would be the best way to do it. Obviously the convenience of the materials suits a lot of people, and if we can get it in some form that we know is safely degradable, then we ought to look for that. But part of our mission here is to expose all of these things, including the study to see exactly the best way to go.

I do want to comment on one other thing and then we will let you go. That is, we have put substantial pressure on New York City, as has EPA, to get on with its sewage treatment projects. The North River plant is operating. Red Hook is in the primary level. They are scheduled to be at the secondary level, I believe, by 1991. The Red Hook plant has not yet started its primary operation but will be in operation, I am told, ahead of the last schedule change that was ordered. We believe that we will see that kind of a change made. That is very, very important.

We are being rewarded. Nature has a will and a way of fighting back, and we do see in the places where we have been able to start to control pollution, dramatic evidence of return of species in volume. The Delaware shad is just incredible. Apparently they are having the largest shad run they have had in 70 years. It's reassuring to know that. There is evidence of salmon going up into the Hudson River now.

Hopefully, if they can live there, without mutating, maybe we will be able to see those species free of chemicals and other pollutants.

Before I let you go, is there anything else that either of you would like to express in terms of any Federal initiatives that we ought to take that we haven't touched on?

Mr. PALLONE. The one thing that I think there seems to be some question about is this designation of the 106-mile site. It seems to be a little bit unclear as to whether or not that interim designation can be redesignated pursuant to Federal law. So maybe one thing that I would ask could be looked into is some way of legislating that that site not be used after the 5 years, because the way I understand it, it could be used and designated again after the end of that five-year period. I would like to see that option eliminated.

Senator LAUTENBERG. Our mission is to stop ocean dumping altogether. Whether it can be accomplished in 5 years, I don't know. We will have to see what happens in terms of the investigation of procedures to eliminate the volume of sludge. We want to be sure that if we push communities into other means of disposal, that they are safe. We don't want to exchange one pollution source for another. Obviously, incineration jumps up as the most likely source. But we want to be sure that those discharges in the air are safe. So our mission is to rid the ocean of dumping as much as possible.

We would even like to see an end to casual dumping of materials, whether it's at Sandy Hook or Asbury Park or Ocean Grove or Cape May, by people who just throw things away without thought We have seen a dramatic reduction, though not enough, of littering along our highways because people know, A, they will be fined, and, B, there is an awareness that didn't exist before. Well, we have the same obligation to say to people down at the shore, "Listen, do you want to do this to a dolphin or a person or what have you? Throw it in the basket."

Mr. ADDEO. Senator.

Senator LAUTENBERG. Yes?

Mr. ADDEO. The only thing I would ask is that some consideration be given to the fact that whenever there is a legislative initiative at either the Federal or the State level, it's usually the local forms of Government, local Governments, that have to implement or bear the burden, if there is a burden attached. I think that there should be some mechanism put in place for either the EPA to make available to counties, local, and even, I guess, State representatives the technology that is out there. Far too often we are forced to make the decision. We make the decision at the local level on how to build a secondary treatment plant or how to dispose of sludge. We have to design a plant to dispose of sludge, whether it's land-based, treat-dispose it, treat and dispose of other wastes, and we do not have the technology available to us. We don't have access to that technology.

A few years ago we had to make a decision based on dumping waste disposal, and we could not find an alternative. We checked with the State, we checked with the Federal Government. They existed, but we didn't have easy access to it. I think that is getting to be more and more of a problem, especially for the urban areas, when these bills are passed. When we say upgrade to secondary, when you say stop pollution, stop plastic pollution or whatever else, the impact on the local level has to be studied, and there should be some mechanism for direct assistance to the municipality without going through three layers of Government.

Senator LAUTENBERG. That is a very good point. I appreciate it. You did say something in your statement that I wanted just to clear the water on, as they say. That is, though people are scared off from coming to the beautiful beaches because of the pollution problem, you did say that when you test water quality, that you actually see improvements from some time ago. Do I state it correctly?

Mr. ADDEO. A few years ago Asbury Park bore a lot of the blame for ocean pollution and we feel it was by design. It was easier to blame Asbury Park because it had a primary treatment plant. We urged the Federal Government and the State Government to implement uniform testing because when they were doing testing and there were high counts off of Asbury Park's beach, every park closed.

Anyone who has ever looked at a body of water, especially the Atlantic Ocean, knows that if there were pollutants on Tuesday off of Asbury Park, it's in Bradley Beach and Belmar by Wednesday, Thursday, or Friday. We closed. Other municipalities didn't. We were told we had the problem. When there was uniform testing implemented last year, we received an award for having some of the best water quality with the primary plant.

Now, it is improving according to the State and the Federal Government. Water quality that is now being tested is improving. What we're saying is that more than that is needed. All you have to do is look at the ocean and you can tell that more than that is needed. When you cannot see into the water off Sandy Hook or the water in the ocean off Asbury Park, you cannot see your hand three inches below the surface of the water, four inches below, something is needed. It is improving. I think what has been done by the Federal Government and the State Government has helped. But I think it's the unsightliness we have to attack now and then effectuate some long-term corrections to the water quality.

Senator LAUTENBERG. Thank you both for being with us today.

Mr. PALLONE. Thank you, Senator.

Mr. ADDEO. Thank you.

Senator LAUTENBERG. The next panel is as follows: Cindy Zipf. Cindy is the coordinator for Clean Ocean Action. I understand she has an award for me for my diligence on behalf of clean environment. Michael Redpath is here. Michael is the cochair of the Shore Region Tourism Council. Please take a seat. Nils Stolpe, the executive director of the New Jersey Commercial Fishermen's Association, and Bob Schoelkopf, who is the director of the Brigantine Marine Mammal Stranding Center. We invite you all to take your seats.

Cindy, do you and Bob Schoelkopf have something that you wanted to present to me?

STATEMENT OF CINDY ZIPF, COORDINATOR, CLEAN OCEAN ACTION

Ms. ZIPF. Yes.

Senator LAUTENBERG. Present is probably the wrong word to use.

Ms. ZIPF. Make you aware of. Right.

Senator LAUTENBERG. I don't think I am going to like it, but I am going to accept it.

Ms. ZIPF. This is a jar of plastic tampon applicators that was collected in one hour off the coast of New Jersey on the Sandy Hook beaches. I would like to present this to you. I have used this on a number of occasions to present the problem and to move for legislation to ban disposable plastic products. I would like to present this to you now.

This is a reminder of your pleasant journey along the New Jersey shore.

Senator LAUTENBERG. Well, I would tell you this, I am glad that it is in a sealed jar. Unfortunately, we are forced to giggle a little bit about it because it's so horrendous, but this is the kind of evidence that we occasionally need to shock us into the reality of what is out there or what is still coming. We thank you, Cindy.

Ms. ZIPF. You're very welcome. They are also known as the "New Jersey seashell" by many people along the New Jersey coast.

Senator LAUTENBERG. Well, I would have to hope that you would not suggest that New Jersey is the only place that is the recipient of this.

Ms. ZIPF. No, but they are very, very common.

Senator LAUTENBERG. All right.

Bob, did you have something?

Mr. SCHOELKOPF. Well, we normally handle marine mammals, but with this occasion we were presented with this weekend, and it is our New Jersey-type bluefish caught just along the entire coast, except this one had a little problem. It ran into a six-pack ring. This is what everybody is talking about.

You can see how it's grown into the skin and around the gills of the animal. If the animal hadn't been caught on a hook and line in Absecan Inlet, it would have died shortly after from the infection and lack of breathing ability.

Senator LAUTENBERG. The bluefish, if you have ever done any fishing, and I have, is such a beautiful fish. That fish shows us what is happening out there, and there isn't anybody who isn't sympathetic and sensitive to the destruction of this sea life.

Thank you very much. Please try to limit your testimony to 5 minutes. Your full statement will be included in the record if you don't finish. So don't worry about that. Why don't we start with Cindy Zipf, please.

Ms. ZIPF. Thank you, Senator. To begin, I want to welcome you to the Jersey shore. Unfortunately, a most fitting location to engage in a discussion of problems and solutions of toxic pollution in our marine environment. The devastating effects, as you have pointed out many times already, have become increasingly clear at alarming rates, while efforts to control the deadly tide have gone unchecked.

You mentioned our trash attack which occurred last year. Recently, we held another beach cleanup on April 26 of this year, not even a full year after the trash attack. This one was primarily aimed at bringing high school students onto the beaches. This group of 150 dedicated individuals collected the following on less than a mile of beach on Sandy Hook: 113 paper bags of bottles and cans representing over 1,500 bottles and cans individually; 345 paper bags of plastic containers and sheet plastic and six-pack rings, including thousands of individual items; 116 paper bags of styrofoam. We found so much styrofoam at our trash attack that we made it a separate category.

Four bags of hospital supplies. Hospital supplies are found at alarming rates. In fact, I brought a jar for you to look at as well, which contains the hypodermic needles and syringe bottles that we are finding on the beaches of Sandy Hook. I will bring that up in a moment. We found 444 plastic tampon applicators; 64 tires; a 50-pound glob of tar; a fuel tank; two garbage can lids; shoes; refrigerator door; milk crates; chairs; toys—and on and on and on.

The event required four trips to the landfill, and one pickup truck filled with cans and bottles which were taken to the recycling center. Over 70 percent of the material was plastic, with no place else to go but the landfill.

Three days later, the beaches were covered once again with unsightly and dangerous debris.

The problem with plastics is that they are persistent. In roughly 25 years, we have become a throwaway society. The disposables have entered into every aspect of our daily lives, and the result is that we now being left with, and continue to generate, a nondisposable disposable nightmare. In fact, as a monument to our society, the Staten Island landfill will soon be the highest point on the east coast from Maine to Florida.

In the marine environment these nonbiodegradable products drift and float forever, maiming and killing countless marine animals, and I am sure Bob will go into a lot of detail about that. Boaters suffer from entangled props and clogged intake valves. If by currents, winds, or chance they wash up ashore, they leave beaches unsightly, damaging the esthetic value of the Jersey shore and in some cases posing a public health threat, which I think these hypodermic needles certainly show.

The smoking gun as a source for the marine debris is very difficult to pinpoint. In the highly urbanized arena north of Sandy Hook, for instance, over 18 million people live and work, using vast quantities of these nondisposable disposables. The estuary is plagued by illegal dumping, commercial shipping and cruise liner traffic, street filth from runoff, combined sewer systems, mismanaged sanitary landfills, inadequate or nonexistent sewage treatment facilities, the careless boater or picnicker, and the litter dropped by the often-unconscious citizens that have just lost their ability to understand about litter and that their litter continues on and on.

These all play significant roles in the endless parade of floating trash. Although it is difficult, and I have yet to find a piece of trash which says I have escaped the Staten Island landfill or lost at sea from the S.S.-whatever, and this makes it very difficult in terms of accountability. As overwhelming as the problem is, there are solutions. Aggressive actions and leadership are required of our elected officials in order to solve these problems. Expensive sanctions and incentives are required to reduce and ultimately eliminate the problems with plastics.

One such solution, Senator Lautenberg, is your bill, S. 633, the Plastics Pollution Control Act. This bill is the most comprehensive effort to date to control the deadly tide of plastics into the marine environment. As you know, Clean Ocean Action, and including the American Litterol Society, greatly support this bill and endorse it and want to see it moving as quickly as possible.

Most importantly, this bill does focus on domestic sources, and it makes it a Federal crime to anybody to drop or dispose of plastics in any such manner as for them to get into our marine environment. It provides civil and criminal fines, including economic fines and jail terms. It provides incentives for citizens to identify those who are violating the law and lead to their conviction because part of the fines could possibly go to them, which is a great incentive.

Most importantly, I think, in terms of really controlling plastics, this legislation does include that study to find out how we can reduce the amounts of plastics.

We have talked about Marpol, and I don't want to get too much involved in that other than to say that Marpol is a part of it. It's a piece of the puzzle, but even though our ratification will not make it binding, it will certainly encourage other Nations. But I think the most important aspect is that it does begin to deal with the domestic sources of the plastics and floatables.

Here in New Jersey, Senator Pallone has just described the many efforts that are taking place at the State level to control the problem as well, such as the Department of Environmental Protection's study on sources as well as an initiative for nonpoint-source pollution control.

These are all welcomed efforts. However, caution must be taken not to view marine pollution source control and beach cleanups as the solution. The real long-term solution to the plastics crisis is to reduce the volume of plastics generated. There are perfectly adequate biodegradable alternatives available. These products should be used. At a minimum, the cost of disposal and nondegradable disposable containers put the cost where it belongs: on the manufacturers in using these plastics.

The petroleum industry has basically gone unchecked in its generation and diversification and uses for plastics. However, not included in the cost of your cheap plastic soda bottle or oil bottle or tampon applicator or whatever the case may be is the long-term generations-long cost of storage at a landfill or treatment of the toxics generated in the production of these plastics. A ban should be placed on nondegradable products where perfectly adequate biodegradable products are available. Deposits and recycling of all containers must become an integral part of an overall plastic-reduction policy.

The emphasis which is being placed on the creation of degradable plastics, as you have already brought up, is that we are concerned that not enough is known of these degradable plastics and are we not possibly generating future problems to come. Before any mass marketing or endorsement of all plastics to degradable ones, careful studies must be done to ensure the safety of these products.

Before I conclude, just a couple of statements about dumping. Senator Pallone did a very good job of describing what the problems were and the fact that we had some floatables wash up on the beaches of Ocean County with neither a clue nor a shred of evidence as to how the culprit was. It's clear that the surveillance of our offshore waters basically goes unchecked. In fact, in 1986 the U.S. Coast Guard, which is charged with the surveillance of all seven dump sites and whose budget has been drastically cut, counted over 2,500 dumps of sewage sludge alone and only 10 percent of those were actively monitored.

It is difficult for me to complain about surveillance of a practice I feel is wrong, that being ocean dumping. However, we do have the technology to mechanically observe goings-on off our coasts until such time as we can stop the dumping. Senator, it's unconscionable that after 10 years of talking about the black box, that these things are not being used at a full scale on all the dumping going on. We certainly have the technical capability to put those black boxes on line.

In general, ocean dumping is an embarrassment, and I am glad Senator Pallone brought up the whole issue of the 106-mile dump site being an interim alternative. As soon as we possibly can, we should move towards phasing dumping. However, I am going to mention this because it's timely in that in a few weeks we will be having a hearing, on July 23, to discuss an application for ocean dumping at the 106-mile industrial dump site.

The most outrageous, I feel, of most of the dumping is done by Dupont. Dupont, one of the most sophisticated companies in the world, is continuing to apply for permits to dump wastes that EPA has asked them under court order to stop since 1979. We hope you will join our effort to get Dupont out of the ocean, the last industrial polluter at the industrial dump site.

In conclusion, today our environment bears the brunt of the throwaway society, overloaded landfills, plastic beaches, and dying marine life, and in the case of New Jersey waters, the title of the ocean dumping capital of the world. Only with strong actions from our elected officials will the plastic tide turn and a walk along our treasured beaches will not mean a trip to the garbage can.

I thank you for the opportunity to speak to you today.

Senator LAUTENBERG. Thank you very much for that depressing testimony.

We would like now to hear from Mr. Redpath.

Bob, just tell us a quick word about your organization. I neglected to tell everybody that Cindy Zipf is a coordinator for Clean Ocean Action, which is a very important environmental group. Her knowledge of the issues is excellent, not to ignore her incredible energy and commitment to a clean environment.

Ms. ZIPF. Thank you, Senator.

Senator LAUTENBERG. We appreciate the work you do.

Ms. ZIPF. It's good to have Senators like you that can help move our agenda forward down in Washington.

Senator LAUTENBERG. Well, other than the mutual admiration—thanks for your comments.

Bob, if you would, just describe your organization briefly, please.

STATEMENT OF ROBERT SCHOELKOPF, DIRECTOR, MARINE MAMMAL STRANDING CENTER

Mr. SCHOELKOPF. Yes, sir. The Marine Mammal Stranding Center is a nonprofit organization stationed in Brigantine, New Jersey, but we are responsible for rehabilitation and removal of all marine mammals and sea turtles along the entire coastline of New Jersey. That takes in virtually every beach that we have along the coast and along both bays. For the past 10 years we have been recovering marine mammals and sea turtles off of every single beach.

Senator LAUTENBERG. What marine mammals might we be talking about?

Mr. SCHOELKOPF. We are looking at harbor porpoises, dolphins, seals, pilot whales, right whales, fin whales, 70, 80 feet in length, many different sizes and species. Unfortunately, most of those marine mammals, when they do come ashore, have already died from various either natural or manmade causes.

Senator LAUTENBERG. If there is life, you try to return them to the sea?

Mr. SCHOELKOPF. Right. The live ones are taken to the center for rehabilitation and then released back into the wild.

Senator LAUTENBERG. Thank you. Please give us your testimony.

Mr. SCHOELKOPF. As I mentioned, for the past 10 years my staff has been able to see virtually every beach in New Jersey, and from 10 years ago till now we have seen an increased debris problem, mainly in floatable plastics and styrofoam as it mounts up along the beachfront. That plastic which looks like and is litter to the beachgoers becomes very deadly when it comes into the ocean and comes in contact with marine mammals and sea turtles. Every year these animals ingest many, many pieces of plastic in an everyday effort to feed. Leatherback sea turtles, which are normally eating jellyfish, have a tendency to pick up anything that floats by that is transparent, and that being plastic, it's its biggest problem.

Over the years we have had at least a dozen sea turtles come in with plastic problems both internally and entanglement. In fact, I will be leaving here early today because I just received word of another two animals just south of here that we will be picking up, one being a leatherback. They are the most probable for plastic ingestion.

Several years ago we received a call from Seaside Heights, and there seemed to have been a live whale on the beach down there. It was during the summer months. It was a live sperm whale, a two-year-old male. That animal thrashed about in eight-to-ten-foot surf for some time as we made efforts to get it out to sea, unsuccessfully. It finally died on the beach, very emaciated. When we did the necropsy on the animal the next day, we were horrified to find this balloon. It's a plastic mylar balloon with three feet of ribbon, still attached, blocking the entire stomach of the whale.

Now, the sad thing about this isn't just the death of that one whale, but the fact is that this whale is a feeder in deep water. It doesn't come along our beaches and feed; it feeds two to three hundred miles off the coast. As a result of that, this animal found balloons floating out there, and swallowing it killed the animal.

We only see about one percent of the total animals that die at sea come ashore in New Jersey. But as a result of increased examinations of dead animals by both New Jersey and New York officials, we found that New Jersey and New York had the highest incidence of deaths in marine mammals and sea turtles related to plastic ingestion. That is kind of embarrassing to see that compared to the entire east coast. Even when you look on a worldwide aspect, 10 years ago, maybe one or two animals washed ashore in this condition. Now you have a worldwide problem, and in the United States every coastal community has that same problem.

The marine mammals are a way of letting us know about this. Unfortunately, these endangered species are dying off a lot quicker than we know and than we can see. The horrifying thing again is the fact that when you think of a sea turtle eating a piece of plastic like this and blocking the ileosecal valve and that dies at sea 100 miles out, that turtle will decompose or become food for sharks. That plastic will still remain. How many animals can die from the same piece of plastic that remains floating in the ocean? It will never break down, yet these animals will continue to die off that same trash.

I have a feeling that we have less whales out there than we do plastic, and if something isn't corrected shortly and hopefully the urging of the passage of your bill, S. 633, will assure that some type of cleanup is initiated both coastally and by the Federal Government to assure that this dumping doesn't continue. Again, the private sector and the industry that produces this plastic should take an awareness and have the responsibility, if they cannot come up with a biodegradable product, then at least warn the people using those products that things die as a result and marine mammals and people have to suffer as a result of the use of those plastic products.

I would like to thank you again, and I hope that bill is passed very quickly.

Senator LAUTENBERG. Thank you very much, Mr. Schoelkopf.

I was very involved with environmental groups before I went to the Senate because I respect what nature has placed around us. I admire the organizations that work so hard to save the whales or to save a particular species, it seems paradoxical, to say the least, here we are participating in the kill as contrasted to participating in the rescue. It's too bad. When we see a boat out there, a whale ship, taking these beautiful beasts out of the ocean and cutting them up for no really valid reason anymore, it saddens us, and here these things are being killed by the materials that we have thrown away.

Well, you encourage me to work harder, and I really love the work that you do at that place.

Mr. SCHOELKOPF. Thank you.

Senator LAUTENBERG. Do you get in the boat and pull these guys off the beach at times?

Mr. SCHOELKOPF. We do. If you know anybody with a boat, it would make it a lot easier.

Senator LAUTENBERG. Yes.

How do you do that? You don't just push it with a pole, do you?

Mr. SCHOELKOPF. We are very happy to have a very good working relationship with the United States Coast Guard, and in New Jersey just about every station within New Jersey has been very willing and happy to work with us in the recovering of these animals, putting in extra time, more time than they're required to do, and they are very concerned with our work.

Senator LAUTENBERG. Is it a volunteer group?

Mr. SCHOELKOPF. We are a volunteer group, that's right.

Senator LAUTENBERG. How are you financed?

Mr. SCHOELKOPF. Private individual donations. Unfortunately, there is no Federal funding available.

Senator LAUTENBERG. Send me a note, will you? I will see that you get a contribution.

Thanks very much.

Mr. SCHOELKOPF. Thank you very much.

Senator LAUTENBERG. Is it Stolpe? Is that the Scandinavian pronunciation?

Mr. STOLPE. That's the Scandinavian pronunciation.

Senator LAUTENBERG. If you would, Nils, just tell us what you do.

STATEMENT OF NILS STOLPE, EXECUTIVE DIRECTOR, NEW JERSEY COMMERCIAL FISHERMEN'S ASSOCIATION

Mr. STOLPE. I am the executive director of the New Jersey Commercial Fishermen's Association, which is a group composed primarily of commercial fishermen up and down the coast of New Jersey, but also includes other industry members. We represent the interests of the commercial fishing industry in the State. I am here in place of Bob Ignatovich today. Bob is the owner of a dragger boat that fishes out of Belford around Sandy Hook and Raritan Bay. He is out fishing today, so he can't be here. I spoke to him at length on getting the testimony together, though.

The New Jersey commercial fishermen have been dealing with plastic pollution in increasing amounts for far too long. The New Jersey Commercial Fishermen's Association recognizes Senator

Lautenberg's proposed Plastics Pollution Control Act as an effective means of combatting this problem. The negative impacts of plastic pollution on the commercial fishing industry are many and varied. They range from the purely esthetic to the bottom-line practical. While it would be impossible to put a dollar value on what this form of pollution costs the commercial fishermen in New Jersey without a great deal of effort, we have seen that the costs both directly to the industry and indirectly to the State are significant.

The New Jersey Commercial Fishermen's Association, in concert with other New Jersey groups, is working to build up New Jersey's image as a major producer of high-quality fish and shellfish. Our industry currently contributes from $250 million to $500 million to the State's economy each year. With our outstanding access to fisheries resources and the largest seafood market in North America, we could be in a position to capitalize greatly upon the growth in the domestic seafood industry, which is currently being forecast. And yet, the highly visible image of our beaches, when they are occasionally layered with various types of plastic refuse, could easily prove to be a deterrent to this type of growth.

Our fishermen are constantly contending with gear fouled by and nets clogged with plastic wastes, which have made their way into our inshore and offshore waters. The obvious impact of this is lessened fishing efficiency, that is, more effort for less fish. The more subtle impacts result from the necessity for longer trips to fishable areas, larger vessels, greater overhead, higher consumer prices, less money to the fishermen, and less money spent to New Jersey.

While there seems to be a dearth of information on the effects of waste plastics on the fisheries resources, there must be a significant negative impact on the productivity of areas such as the New York Bight. New Jersey's commercial fishermen have been among the leaders of those concerned with marine and estuarine pollution. They are always among the first to notice it and are always among the first to suffer from it. We read Senator Lautenberg's proposed Plastics Pollution Control Act of 1987 with a great deal of relief, because in this instance they won't be amongst those who are penalized for it.

Fishermen lose gear, not often, seldom carelessly (careless people don't become successful fishermen) never purposefully. Nets and lines and floats and chains and hooks and wire cost money. Too often they cost too much money. Fishermen get all of the use that they can from them. Then if possible, they recycle. You have all seen the authentic fishnet wall hangings and lobster pot cocktail tables that result from this recycling.

Occasionally, a trawl will get hung up on a snag and a section of net will rip out. Once in a while another vessel will run through a gill net or a long line, cutting it up in the process. When this happens, the fisherman will save as much of the gear as he can. He has already paid for it and would rather not replace it. This isn't to say that lost gear out there is not contributing to the plastics pollution problem. When it is there, however, it is there by accident, not by design or negligence.

We would like to thank the Senator for his recognition of this fact in the section of the proposed act exempting accidental losses where all reasonable precautions have been taken to prevent such loss. This is critical to the commercial fishing industry.

We recommend that the plastic pollution reduction study specifically address the topic of lost fishing gear. While it is our belief that the commercial fishing industry is a minor contributor to the plastics pollution problem, we would like to see that role lessened even further, with a concentrated, coordinated, and Federally supported effort. We recognize that many of the companies supplying gear to the commercial fishing industry are not large enough to undertake this on their own but would need some type of Governmental assistance.

The public awareness program could also be utilized here in designing programs aimed at reducing gear losses.

Finally, while New Jersey's commercial fishermen have done and will continue to do all that they can to minimize all forms of marine pollution, they are doing it with an increasing frustration. To make an offshore trip and bring your trash back to the dock with you is certainly acceptable to the fishermen. Knowing that there is a reasonable chance that some of that same trash could end up back offshore in the not-too-distant future is what causes the frustration, particularly for someone who makes his living from the ocean. Until all ocean disposal is controlled, the quality of life in and the economy of New Jersey is going to suffer.

We support the Plastics Pollution Control Act of 1987 both as an effective means of decreasing a form of pollution which has a significant impact on our industry and as another step in our struggle to clean up our marine and estuarine waters.

Thank you, Senator.

Senator LAUTENBERG. Mr. Redpath, you are the cochair of the Shore Region Tourism Council. If you would, please tell us a little more about your organization before you testify, please.

STATEMENT OF MICHAEL REDPATH, COCHAIR, SHORE REGION TOURISM COUNCIL, MONMOUTH AND OCEAN COUNTIES

Mr. REDPATH. The Shore Region Tourism Council is one of six State-chartered councils within the State of New Jersey that is geared towards coordinating tourism development efforts. The Shore Region Tourism Council deals with Ocean and Monmouth Counties. It's a volunteer organization made up of environmental groups, tourism-related groups, businesses, Governmental agencies.

I welcome the opportunity to comment on S. 633 and the problems of plastic pollution and ocean waste disposal. These are the problems that deeply affect tourism and which continue to go unabated. Tourism along New Jersey's oceanfront is at a critical juncture. We have talked and legislated for years, but the appearance of our ocean waters has not improved. So while we fight for our share of the increasingly competitive tourism market, the public perception of New Jersey beaches continues to decline, at great cost to our economy.

My personal opinion is that the general quality of our ocean waters has improved as a result of improved treatment of sewage and other discharges, while the plastic problem and movement of trash from New York has worsened. I don't know that there have been any studies as to volume of plastics on our beaches, but I do know what I see. As we rely more and more on plastics to contain our convenience products, New York disposes of an ever-increasing amount of those plastics on our beaches.

Our ocean waters could be 100 percent pure, but the presence of New York refuse on our beaches leads the public to believe that the waters are tainted. You can't necessarily see dissolved pollutants, but you certainly can see the solids.

There certainly is plenty of media coverage of trash on New Jersey beaches. Any given week, media throughout the three-State region has at least some reporting of refuse on New Jersey beaches. We need that reporting to urge people to action, but, unfortunately, the public tends to not understand the media stories. Two trash bags of hospital waste on a beach in Monmouth County is soon imagined into a reason for not taking the kids to Long Beach Island.

The problem of dealing with plastics is many layered. We have come to rely heavily on plastics without an answer to the question of how to dispose of plastic products and containers once we are through with them. Currently, there is little incentive to develop an answer at the root; that is, designing a recyclable or biodegradable plastic product or to substitute already available biodegradable products for plastics when possible. Instead we deal with landfill questions. And there are no answers because we are running out of space to store our discarded products. That is exactly what we are doing: storing, not disposing.

New York has a unique answer to the disposal problem: send the trash down to New Jersey beaches and let New Jersey worry about how to get rid of it, and let New Jersey and its shore municipalities pay for that disposal.

We in New Jersey and along the oceanfront are at fault, too. We use our plastics and by doing so signal to the manufacturers that we accept the problem of waste plastic storage as a cost of having the convenience of plastic packaging. And, too, many of us are careless in disposing of our own plastic waste.

Additionally, we have an economy that has grown around plastics. Our country's economic health would be threatened were we to curtail our plastic production drastically. Allow me to quote from an article in this morning's issue of U.S.A. Today: "First came the plastic catsup bottle. Next you might see seafood, baby food, and beer in plastic containers. Such products might help the U.S.A.'s $138 million plastic industry continue to grow, although at a much slower rate than in the past. 'Over the next 15 years, plastics demand will climb an average of 3.1 percent a year versus 6.3 percent a year in the 1970-to-1985 period,' says a new study by Kemp Systems, Inc., consulting firm for the Society of the Plastics Industry."

The study says the plastics industry will swell from 21,733 firms to 28,000, producing 76 billion pounds of plastics per year. That's 315 million pounds per U.S.A citizen. Study predictions: use of plastics in food packaging will double, reaching 40 percent of packaging material sales. One reason, booming demand for single-serve plastic microwave dishes. Plastic shopping bags, now 25 percent of that market, will grow to 25 percent of bags sold. And the statistics go on.

We need to do two things: reduce, and contain. Senate bill 633 does both. As to reduction, section 107, dealing with the Plastic Pollution Reduction Study, specifically begins the process of dealing with the root of the problem. All the storage solutions in the world will not be sufficient unless we find a viable alternative to relying on products that do not decompose harmlessly into the environment once we are through with them.

As to containment, Senate bill 633 addresses most of the sources of plastic pollution and imposes significant penalties for improper disposal. I think we should go further to encourage action on the requirements of the bill, however, there needs to be incentives for individual states to take responsibility for the actions of their residents and municipalities. A timetable for implementing recycling and proper disposal programs should be created. There should then be both incentives for meeting the timetable and sanctions for failing to meet it. Fines are often seen as a cost of doing business. But the gain or loss of significant federal funds is taken quite seriously by most states in this time of tight budgets.

Additionally, there should be a provision for establishing a means of tracing trash from suspected repetitive sources, such as Fresh Kills landfill. Should refuse from the suspected source be found outside the source, the operator of the source should be charged triple the cost of cleanup.

Were we to be able to start tagging trash at Fresh Kills and New York had to start paying to clean New Jersey beaches, I think we would find the problem being handled much more quickly.

I would like to close by addressing environmental problems generally. We have one of the most beautiful countries in the world. Unfortunately, for whatever reason, we, as a people, have lost much of our respect for the environment, or at least don't treat it respectfully. Perhaps that comes from having become so adept at artificially controlling our environment.

The bottom line is that we have wonderful resources like the New Jersey shore and we don't take them seriously as resources. Fresh Kills would never get away with its trash landing daily in the Meadowlands complex. New York could never get away with dumping sludge in the middle of the Atlantic City expressway. But because no one owns the ocean specifically and so few live near it and it's always been there at little or no cost, we take the ocean and its beaches for granted. We need to start thinking of them as part of our home and we need to treat them accordingly.

On behalf of our tourism industry, thank you, Senator Lautenberg for your efforts towards a cleaner ocean. I wish you all the success with Senate bill 633 and I thank you once again for the opportunity to testify.

Senator LAUTENBERG. Thank you very much. Each one of you has made a very important contribution to the shaping of this legislation. Besides the laudatory comments the fact is that we are in this together, all of us. What you have managed to do is to highlight the causal discharge of this material into our environment.

I think it's fair to say that most people don't realize what ultimately happens with the very convenient packaging that we have. It is nice to be able to put your fingers in a six-pack ring and pick up six of whatever you like, and there isn't enough thought given to the consequences of the use of this material or the casual discharge of it.

So what we're doing here today in addition to helping me and helping to shape the record for the legislation is also conducting an awareness campaign. It's very important for people to realize that the thing they're going to throw away may kill a precious species whether it's a leatherback sea turtle or a young whale or what have you, I think there might be some attention given to the method of disposal.

I wanted to review a couple of things with Cindy Zipf. Do you see any reason to hold up pursuing this legislative agenda while we wait for the Marpol, the Annex 5 amendments, to come into place? Is there any reason? Is there any logic to saying, wait, don't let us just rush into something?

Ms. ZIPF. Absolutely not. I see one of the greatest aspects of the bill as being the domestic focus, number one. Number two, the action required of the EPA to look for reductions, ways in which to reduce the plastic. And also the public awareness. The Marpol section is an important one in terms of international control of pollution. However, there is so much that is domestically oriented. And, as you well pointed out, even our ratification will not make it binding.

So I think it should not hold up in any way an aggressive effort to move this legislative agenda as quickly as possible. Every day results in a billions and billions of tons of more plastic that we're going to have to deal with at some point.

Senator LAUTENBERG. Is there any of you who see at the moment signs of diminution of the volume of material, or is it just growing on us, statistics notwithstanding? I think Sam Addeo said it: when you see it, you know you've got it. If it looks like plastic and it feels like plastic, it must be plastic.

Ms. ZIPF. I think the other important thing to remember, too, is that every piece of plastic ever generated is still with us today. So when Mr. Redpath is talking about 76 billion pounds being generated in one year, that's in addition to the billions of pounds the previous year and the previous year and the previous year. So I don't see it diminishing at all, it's just compounding.

Senator LAUTENBERG. That article you read from mentions the per capita use.

Mr. REDPATH. I question that statistic.

Senator LAUTENBERG. Yes, that didn't sound right.

Mr. REDPATH. They say 315 million pounds per citizen. I kind of doubt that. I just found this this morning at breakfast, so I didn't have a chance to work it with a calculator.

Senator LAUTENBERG. Yes. We ought to check that.

Mr. Stolpe, I think your testimony was very candid. I appreciate the fact that you said that within the industry there is use of plastic and it's very carefully done to the extent that everyone knows their economic environment is being affected. How do you feel about the ultimate reduction of the use of plastics? Is the indirect cost of using this material an offset to the more abundant fish supplies, cleaner water, all of those other things?

Mr. STOLPE. I think the commercial fishing industry, as I said, contributes a fairly minor part to the plastics pollution. Again, even that minor part is too large a part, and I am sure it can be reduced even further by public education, industry education, and technological development. At the same time, if the total load of plastics being dumped, getting into the oceans, is reduced, it is going to up the productivity of the waters. It is also going to up the efficiency of the commercial fishermen.

Senator LAUTENBERG. It's peculiar, isn't it, that with all of the concern and the effort that we have put into protecting our waters from overfishing by foreign fleets, that now the problem that we see is the fact that we're managing to kill these animals senselessly.

Mr. STOLPE. Yes.

Senator LAUTENBERG. If they're part of the food chain for human consumption it's one thing, but to let them die and spoil out there is just of no value to anybody.

Mr. STOLPE. I think an important consideration is the fact that it is so hard to generate data to have an idea of what is going on out there, as Bob had mentioned.

Senator LAUTENBERG. Is the data available if we spent the money, do you think?

Mr. SCHOELKOPF. Not really. There is no one out there. There is no agency out there to do a routine biweekly check and documentation.

Senator LAUTENBERG. Could it be done, do you think? Is there enough science around?

Mr. SCHOELKOPF. We did it last year for biweekly trips off of Ocean City, and that's where several times we ran into trash that was 50 yards wide and two miles long just floating endlessly. That's the one thing we saw consistently. If we're able to do it—we are not scientists but we're more environmentalists, and we can see it—it doesn't take much to take a net and scoop up the trash and determine whether it's a six-pack holder, a diaper, baby diaper, tampon, or anything else. It's obvious anybody could do it. The funding is not available at this time to allow people to go out on a weekly basis or biweekly to do it.

Senator LAUTENBERG. Well, certainly, the technology is there. If we make the investment in a better life for human habitation, then the investment is worth it.

Tell me something, Mr. Stolpe, there has been extended criticism about long trails of fishing line out there going many miles. Are you familiar with that?

Mr. STOLPE. Yes. Slightly.

Senator LAUTENBERG. How long might some of those be? It cuts a swath through the ocean that staggers the imagination.

Mr. STOLPE. About 20 miles.

Senator LAUTENBERG. Is it 20 miles long? And how wide a path does it make?

Mr. STOLPE. Just single lines.

Senator LAUTENBERG. Single lines.

Mr. STOLPE. Single lines with hooks strung out.

Senator LAUTENBERG. But they set out them out in multiples, do they not? I mean, you're looking at a trail, and if that breaks away, you've got quite a trail of things out there floating in the ocean.

Mr. STOLPE. I would imagine they generally don't break away. That is a fairly substantial investment.

Senator LAUTENBERG. Is that right?

Mr. STOLPE. The long-line fishermen tend to keep track of that.

Senator LAUTENBERG. All right. Because we have heard comments about the destruction that these things can create when they're scooping along all kinds of things and the cost to recreational and marine life. I am not talking about locally, I am talking about out in the deep seas.

Mr. STOLPE. Yes.

Senator LAUTENBERG. Well, we thank you all. One of the things that you highlighted for us is that it's not free. The cost is probably far greater than the cost necessary to prevent it or to try to cure it right now, because as we dispose of these materials we just elevate the cost for a more reasonable condition in our oceans and in our life generally.

Before we close, Cindy, I just wanted to ask you or any of you, the monitoring that is being done now, you all agree that it's inadequate.

Ms. ZIPF. What monitoring? Yes. At best it's just a very small percentage of what is actually going on out there. There are seven dump sites off the coast of New Jersey, more than anywhere else in the country by far. We are dumping quantities and types of things and we're not watching. Nobody is monitoring.

Senator LAUTENBERG. You're talking about dredging material, you're talking about sludge, et cetera.

Ms. ZIPF. Sludge, acid, industrial wastes, wood burning, plastic, filler dirt. A huge variety. We set a precedent a long time ago that we have been unable to stop so far.

Senator LAUTENBERG. You mentioned the Coast Guard's inadequate budget. We are trying very hard to protect the Coast Guard. I am also chairman of the Transportation Subcommittee on Appropriations.

Ms. ZIPF. Right.

Senator LAUTENBERG. That is the subcommittee most responsible for funding the Coast Guard, and I try very hard because they do a heck of a job.

Ms. ZIPF. They do a tremendous job on a very tiny budget.

Senator LAUTENBERG. The work that they do is of obvious importance, like protecting recreation, commercial, marine activities and so forth, and the United States has a unique place in terms of our development of marine activities recreationally and commercially, and the Coast Guard does it. Now they are assigned to a very active participation in drug enforcement. They have erosion problems they monitor. They clean up spills. It's quite a job.

I will say this to you, that we have protected the budget so far for 1988, but even that budget is still relatively sparse for the tasks that they have.

Ms. ZIPF. Yes. Absolutely.

Senator LAUTENBERG. Thank you all for being with us.

Ms. ZIPF. Senator Lautenberg, before Bob Schoelkopf heads off to treat those dead animals offshore, we would like to let you take one of these down to Washington with you. This is the launching here today of our plastic awareness poster, and I will show it to you.

Senator LAUTENBERG. Good for you.

Ms. ZIPF. This is for the public itself. That will help people understand.

Senator LAUTENBERG. That's terrific. We will display it in our offices, I promise you. It's amazing what the effect is when you see something like a beautiful whale with its enormous size killed by casual discharge of these things.

We will use these posters, I promise you. What we are going to do is we are going to invite the public to write to us with comments. They can do that by reaching us at our Newark office or our Washington office. In Newark it is the Gateway One Building. That is in Newark, New Jersey. The zip is 07102. Usually mail that is sent to the Lautenberg office even if it doesn't have quite the perfect address manages to get to us.

I want to get on with the testimony and invite Mr. Richard Caspe, the director of the Water Management Division for EPA Region 2; Rear Admiral J. William Kime, who is the chief of the Office of Marine Safety, Security, and Environmental Protection, U.S. Coast Guard.

I think you have someone with you, and we will ask you to introduce him.

And we have Mr. McCann, director of the Division of Water Resources of the New Jersey Department of Environmental Protection.

While you are taking your seat, I will leave the room for just a minute and be right back.

[Recess.]

Senator LAUTENBERG. Welcome, gentlemen.

We are interested in hearing your testimony about your offices' activities in carrying out the mandate for these laws, but also for helping us to develop a sensible agenda to rid our ocean of plastic materials.

I would ask first if we could have Admiral Kime present his testimony and to make any opening comments he wishes.

I see you have a colleague with you. We welcome him as well. Would you introduce him?

STATEMENT OF REAR ADM. J. WILLIAM KIME, CHIEF, OFFICE OF MARINE SAFETY, SECURITY, AND ENVIRONMENTAL PROTECTION, U.S. COAST GUARD, ACCOMPANIED BY LT. COMDR. KEVIN J. ELDRIDGE, PORT SAFETY OFFICE, U.S. COAST GUARD, CAPTAIN OF THE PORT, NEW YORK

Admiral KIME. Thank you, Senator. First let me thank you for the privilege of being able to come to your field hearing this morning to talk about this subject that is not only very important to you and to the Senate, but very important to the Coast Guard. You are to be commended, I think, for holding this hearing, and also you are to be commended for introducing S. 633. I think these two initiatives will go a long way towards solving this very important problem.

In previous testimony before other congressional committees I have stated the Coast Guard's concerns regarding the hazards to the marine environment from garbage, particularly plastics and other synthetic materials, including synthetic fishing nets, and I stressed the importance of establishing international standards to solve an international problem through implementation of Annex V of the Marpol 7378 convention.

Annex V would not only prohibit the discharge of plastics into the oceans of the world, but would also regulate disposal of forms of garbage other than plastics generated during the normal operation of ships beyond the territorial sea up to 25 nautical miles from the nearest land.

I also emphasized that early U.S. ratification and implementation of Annex V would demonstrate to the world our resolve to protect the marine environment and giving due consideration to the joint efforts of the international community.

In the fall of 1986 the Coast Guard worked extensively with the Department of State to prepare the documents necessary for ratification of Annex V of Marpol. As you know, Senator, on February 9, 1987, the President transmitted Annex V to the Senate for its advice and consent to ratification, and we in the Coast Guard applaud your efforts in asking the Senate Foreign Relations Committee to address this advice-and-consent issue as soon as possible. We recognize Senator Pell has a great deal on his plate, but I think it is important that we move forward with this, for reasons which I will mention in just a minute.

Also, in the fall of 1986 the Coast Guard worked closely with the National Oceanic and Atmospheric Adminstration, or NOAA, and the Marine Mammal Commission to develop a U.S. proposal recommending the development of international guidelines to assist in the effective implementation and enforcement of Annex V to Marpol. This proposal was submitted to the 24th Session of the International Maritime Organization's Marine and Environmental Protection Committee, or MEPC, and was unanimously accepted.

Currently, the U.S. is taking the lead in preparing these draft guidelines, with the assistance of information received from other International Maritime Organization member Governments and international shipping, trade, and observer organizations for submission to the 25th session of the MEPC, which is scheduled for London from November 30 to December 4 of 1987.

It is also the mandate of the IMO that these guidelines be completed at that time, Senator, and I will head the U.S. delegation to this meeting and will do my utmost to make certain that they are completed.

The scope of these guidelines will include training, education, and information programs for seafarers and the public on the marine debris problem, means to minimize amount of potential garbage, shipboard storage and handling procedures for garbage, shipboard equipment for processing garbage, reception facilities, and means to ensure compliance with Annex V of Marpol. Incorporated in the latter will be provisions for control and enforcement by national authorities and positive incentives and voluntary measures to discourage potential violations.

Mr. Chairman, the Administration has not completed its review of S. 633, and therefore I am unable to comment fully on that bill at this time. I would, however, like to provide some general comments which pertain to this and other legislative proposals which have been introduced in the Congress to implement Annex V.

The Administration believes that rather than enacting separate freestanding legislation to apply the Annex V regulations, that they be applied through appropriate amendments to the Act to Prevent Pollution from Ships, or APPS, which is the legislation passed to implement the Annexes I and II concerning oil and hazardous materials that are covered by Marpol. The reasons for this is that APPS provides the legal structure for applying the provisions of Marpol annexes within the context of the overall convention regime. Especially important in this connection is the Marpol annex amendment procedures. Of course, all of the amendment procedures, regulatory structure, and enforcement provisions currently contained in APPS could be duplicated in freestanding legislation. However, such an approach is less efficient and would not facilitate a careful, comprehensive review of the implementing legislation of the convention.

Second, Articles 4, 5, and 6 of Marpol provide for enforcement on a port-State, flag-State basis. Unilateral coastal State territorial sea, and EEZ—exclusive economic zone—application of the Annex V regulations by the U.S. could have negative effects on the entry into force of Annex V, the acceptance and recognition of the United States as a contracting State to Annex V by the other contracting States and the potential for broad, global acceptance of the Annex V regime.

The U.S. statutory regime implementing Annex V should, therefore, have a reasonable time for Annex V to enter into force before making the regulations effective. Annex V will enter into force 12 months after the date on which not less than 15 countries representing 50 percent of the gross tonnage of the world's merchant shipping have become parties to it. Currently, 27 countries representing 41.85 percent of the world's shipping tonnage have ratified Annex V.

Senator, if I could expand on that just a little bit, the United States represents about 4.8, 4.9 of the world's tonnage. As you have indicated before, this will put us above the 45 percent mark but not push us over. We feel that the current ratification efforts under way in the Netherlands and especially in the Soviet Union will be accelerated as a result of the U.S. ratification. I think the world is looking to the United States to ratify this, and we are very, very hopeful that our ratification, our early ratification, hopefully before the November meeting in London that I just mentioned, will bring about the ratification by other countries prior to that meeting also.

My counterpart from the Soviet Union will be in this country later this summer for bilateral discussions, and if I am armed with a strong indication that Congress is going to act, I feel very comfortable in putting the arm on him very strongly to accelerate their efforts and therefore bring it into force.

You have asked, Senator, several of the panelists the question should we proceed or should we not proceed with this legislation prior to the entering into force of Annex V. I would like to put that in perspective just a little bit. My comments were not aimed at the rest of the legislation contained in S. 633. They were aimed at the applications to the Marpol as they would apply from three miles out to 200 miles.

We have some concerns. I mentioned those in the statement I just read. Let me point out that the State Department has serious concerns that to do this might violate treaty law, might definitely be a violation of customary international law, and I think from a very practical point, Senator, we feel that it would cause us harm.

We have implemented Annexes I and II, Annex I for oil and Annex II for chemicals, hazardous substances, by the flag-State, port-State procedures after they came into force internationally. Obviously, enforcement is a major problem. We cannot put a Coast Guard officer or an EPA employee or employee of the New Jersey Department of Environmental Protection on each and every vessel that transits. We have also heard that many of the materials which are discharged are discharged outside of 200 miles.

The enforcement record or the record of compliance with Annex 1 in this country is over 99 percent. The United States has boarded over 5,000 vessels in the last year, and the compliance rate under this enforcement regime, relying on the efforts of other countries, is 99 percent. The compliance rate in Japan, as reported by them, is 100 percent; in Norway, between 95 and 100 percent. We would not want to throw this out.

Also, one other point is that we believe very strongly that if we ratify, that the sufficient amount of tonnage will be pledged prior to the end of this year. We feel that the 12 months that would take place prior to its coming into force could be used by the Coast Guard to develop the necessary regulations to actually implement this. So I think possibly the discussion here is more of a technical procedural one than a difference of philosophies, and we would like to explore this more with you and the staff as the bill proceeds in Washington.

Mr. Chairman, as I said, the Coast Guard is preparing a legislative proposal to implement Annex V through amendments to the APPS, which we believe will resolve the concerns which I just mentioned, and we, as I said, would be very pleased to work with you and the staff and the committee staff on this matter in the future.

In closing, I would just ask that your subcommittee strongly support the early ratification and passage of the legislation to implement the provisions of Annex V of Marpol.

Senator, I have with me Lieutenant Commander Kevin Eldridge, captain of the port, New York office, and I would like to ask him to very briefly address the issue of ocean dumping, after which we would both be pleased to answer any questions you may have, with your permission, sir.

Senator LAUTENBERG. Can you do that in very short form?

Comdr. ELDRIDGE. I will try, Mr. Chairman.

Senator LAUTENBERG. All right.

Comdr. ELDRIDGE. Two minutes.

Good morning, Mr. Chairman. The ocean dumping program is primarily the responsibility of the U.S. Environmental Protection Agency, which issues permits for ocean disposal, and our role in this program is primarily one of surveillance.

Federal authority for U.S. Coast Guard surveillance activities is derived from the Marine Protection, Research, and Sanctuaries Act, from which ocean dumping regulations have been promulgated. Further, ocean dumping authority is derived from the Refuse Act of 1899, which prohibits any person from disposing of garbage or trash within the territorial waters of the United States. For accounting purposes, ocean dumping materials are separated into two categories: A materials, which are required to be disposed of at the U.S. EPA designated chemical and industrial waste disposal sites; and B materials, which consist of all other materials.

U.S. Coast Guard mission performance standards set the surveillance goals at 75 percent for the category A ocean disposal activities, and 10 percent for category B activities. The sludge would naturally fall into the category B activities.

The U.S. Coast Guard captain of the port, New York, currently surveils dumps at the 106-mile industrial waste site for category A activity. Category B activity surveilled by the captain of the port, New York, include dumps at the 12-mile sludge site, the 106-mile sludge site, acid dumps at the 20-mile dump site, and various designated mud dump sites.

All EPA-permitted dump activities that depart the port of New York area are passively surveilled by the Coast Guard captain of the port, New York. Passive surveillance consists of the transporters calling into our office, accounting for the type of dump activity, the times, defining the activity, destination of the activity, departure point, and the volume of the load to be disposed of.

After this information is recorded by my staff, the captain of the port, New York, personnel issue a transit number to the transporter as his authorization to proceed to the dump site.

Upon reaching the 12-mile dump site, the transporter calls Coast Guard group Sandy Hook via radio to officially inform us that he has arrived and is beginning to dump. At the conclusion of the dump, the transporter again calls group Sandy Hook to inform us of the completion of the dump and that he is departing the site. This information is logged and then telexed to the captain of the port, New York, office for inclusion in the dumping case history file.

Upon return to port, the transporter is further required by the EPA permit to submit to us an overlay of the dumping vessels dump zone track line, the actual route that he took; and the statement that the permit conditions for the particular dump were met. These overlays and statements are forwarded to EPA, where they are analyzed for potential violations. Category A activities, which are the toxic and industrial wastes, are surveilled by dedicating a ship rider to observe the dump. We actually put a Coast Guard rider on the tug that takes the toxic wastes out to the 106-mile site.

The ocean dumping surveillance system, ODSS, developed by the U.S. Coast Guard research and development center in Groton, Connecticut, was placed on line in 1986. The ODSS electronically tracks the vessels engaged in ocean dumping activities and stores this information in the computer memory. Briefly, this is accomplished by placing a remote electronic device on a vessel chosen to be tracked, which records the vessel's position and then stores this information in memory.

Along with this position information, the sensors indicate when the vessel is actually dumping. Thus far, three of the twenty-two dump vessels have been outfitted with the ODSS sensing equipment. It should be noted that this system is in the later stages of development and that the ultimate goal is to outfit all vessels involved in ocean dumping activities with this equipment.

Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Commander.

We will hear now from Mr. McCann.

STATEMENT OF GEORGE McCANN, DIRECTOR, DIVISION OF WATER RESOURCES, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Mr. McCANN. Thank you, Senator. I appreciate the opportunity to be here before you to talk about a subject that is most topical and of most significance and importance to the State of New Jersey, particularly the Department of Environmental Protection.

I would like to point out that the problems we experience we have experienced at the ocean, although first identified as a problem of water concern, has most recently been recognized to be as a result of plastic products and has very important significance as a solid waste concern. Coincidentally, last week, on July 1, our department kicked off a campaign which encourages keeping the Jersey shore perfect. We feel it has been perfect and that it should be maintained, though there are some blemishes that we have seen.

Senator LAUTENBERG. Do you feel it's perfect? I think it's beautiful.

Mr. McCANN. Well, we believe it's a perfect environment both to live in and to visit, and that there are blemishes that have taken place in the esthetics of floatable products that have appeared on the ocean and other activities that taint that image. The program that we have initiated which we would encourage your support and endorsement of, we have some symbols of that to share with you. We have a poster and teeshirts, signs, bumper stickers which we are distributing to all the communities on the Jersey shore and asking all of them to participate in the public awareness aspects of what it means to keep the Jersey shore perfect.

Senator LAUTENBERG. I want to point out to you that the environmental groups showed pictures of fish getting killed and the whales being destroyed and plastic junk all over the place. Here [indicating], very realistically, though, we have beauty personified, a father and child—and I hope he's wearing slippers because he shouldn't be walking around there otherwise.

It is very nice, and I don't want to minimize your efforts, Mr. McCann, but I do think that in view of what we're hearing today, that it's a bit inconsistent when you use perfect as a designation for how things are.

We invite you to continue testifying, and I don't want to minimize your work. I know that you work very hard and the department does work hard.

Mr. McCANN. Well, keeping it perfect is certainly the goal that we have. That is what we try to paint in the picture of what the Jersey shore can and should look like. We do not look, by any means, to underestimate the problems that we have experienced. We strongly endorse and support your Senate bill S. 633.

We would like to point out that there are a number of activities that are addressed in your bill that the department has aggressively undertaken under our own auspices to address some of the problems of plastics and floatables in the ocean. We look to what we have designated the three E's to be the answer: education, engineering, and enforcement. All three of those, I think, are addressed quite extensively in your legislation, and they are the key to dealing with the problem.

Let me first talk about engineering and some of the activities that we have been involved with. We have recently completed a maritime vessel study which was conducted by Admiral Price, who has a great deal of experience in the maritime field. That report is available and it points out the amount of trash and materials disposed of both from oceangoing vessels and from recreational vessels in the nearshore area to be significant contributions to the problems we experience on the beach.

It also points to the fact that litter disposed of on the beaches by people visiting those beaches further contributes to these problems.

In addition to that study, we have under way a floatable study where we have extensively researched different types of materials that we have found on the beaches along the Jersey shore. We are now designating a number of potential sources in the New York harbor as well as in the New Jersey shore area to see if we can verify where contributions are coming from by placing floatable capsules at the various discharge points. We will be tracking them and they have a code on them with phone numbers and identification requests, so as they are located on the beaches we will look to coordinate all that information. It's being done in conjunction with county health agencies and the EPA to complete this study.

Once that is done, I think we will have verification of some of the areas that have long been suspected as targets of floatables that we see on the Jersey shore. Certainly, one of the targets is the Fresh Kills landfill to track as much of the material as we can under our monitoring program to determine how far the material does in fact travel.

Under E for education we have a number of public awareness programs that we have undertaken. In March of this year we had a coastal conference which was held at Long Beach Island to go over a number of programs that we have in assessing what is causing the problems along the Jersey shore.

Part of what we revealed is work that we did under a coastal monitoring program where all of the sewage treatment plants were analyzed in conjunction and monitored in conjunction with the EPA and ourselves and the county health agencies to look at the operation of sewage treatment facilities and their impacts on the water quality.

One of the significant findings was that in fact when the facilities are closely monitored with our surveillance program, that they did not represent the major contribution to the problems that we found on elevated levels of fecal coliforms, but rather nonpoint sources were the significant aspect that was contributing to these problems.

Finally, under enforcement through that program that we have, we have been working with EPA to look to have strengthened the enforcement and surveillance of all of the dumping practices in the ocean. We know many of those responsibilities rest with the EPA and are conducted by the Coast Guard. We would encourage more of that to take place. We have been meeting with them as well as with some of the sludge ocean dumpers here in New Jersey to see what can be done to ensure the minimization of any floatable materials being contributed to the ocean and to move the dump site which currently exists at the 12-mile as quickly as possible to the 106-mile site. Although not an ultimate answer, it represents a better solution immediately than moving it from 12 to 106.

Finally, the points that your bill raises related to Annex 5, Commissioner Dewling has contacted every coastal State and territory in the country as well as lauded your effort in sponsoring this bill as it relates to Annex 5. We have encouraged each of them to speak to their delegates to move on this piece of legislation. We have received a number of responses. We would be happy to share those with you so you can see the type of support that your legislation has received by environmental protection agencies in the coastal communities.

Finally, your help is much needed at the Federal level and State agencies. Although we try to exercise the powers we have, we do not have full jurisdiction to the impacts of what happens to our shore from the ocean and outside territorial waters, certainly.

So we need your assistance. We laud your efforts in your legislation. We will be happy to answer any questions you might have. Thank you.

Senator LAUTENBERG. Thank you, Mr. McCann.

Mr. Caspe.

STATEMENT OF RICHARD CASPE, DIRECTOR, WATER MANAGEMENT DIVISION, ENVIRONMENTAL PROTECTION AGENCY, REGION II

Mr. CASPE. Good afternoon. Over the last several months, EPA Region II and others such as New Jersey's Department of Environmental Protection have made concerted efforts to get a better understanding of what is today one of the most visible sources of ocean pollution: floatables. Greater awareness of the floatables problem is reflected in the activities of regulatory agencies at all levels.

At EPA Region II, for example, recent initiatives under way include a review with the sludge dumpers of their operating procedures for the sludge handling to make sure that synthetic or natural materials which may float or remain in suspension are not ocean dumped; an investigation of the disposal of ship-generated wastes at sea; imposition of stricter conditions on wood burning at sea operations; ensuring compliance by the sludge dumpers with the court-ordered schedules for the phasing out of sludge dumping at the 12-mile site; increased monitoring of ocean dumping activities; funding for the rehabilitation of combined sewer overflows in the city of Elizabeth, the borough of Carteret, and the city of Perth Amboy and the Hudson County Utilities Authority; the elimination of any and all raw sewage discharges and bypasses from the region's sewage treatment plants; and New York City's North River treatment plant, as you said, has gone on line, and Red Hook actually has gone on line as well very recently; and discussion with both New Jersey and New York about the development of a New York Bight harbor study.

One of the main problems we see with regulating floatables is identifying and controlling the numerous sources of these materials. They include discharge of inadequately treated waste water from sewage treatment plants and combined sewer overflows, discharge from nonpoint sources such as storm sewers and street runoff, solid waste disposal activities, and commercial vessels and recreational boats, and the ocean dumping of municipal sludge.

With regard to municipal sludge and the ocean dumping thereof, there has been concern expressed by some people at the disposal of municipal sludge at the 12-mile site is one possible source of the floatables. To address this, EPA has taken the following actions: On April 1, 1985, EPA denied the sludge dumpers' petitions for continued use of the 12-mile site. Subsequent negotiations with the dumpers led to the phasing out of the 12-mile site and a shift in dumping operations to the 106-mile site. All dumping at the 12-mile site is scheduled to cease on December 31, 1987.

Presently, all nine New York and New Jersey dumpers are adhering to the court-ordered phaseout schedules. Westchester and Nassau Counties began 100 percent of their sludge at the 106-mile site in March and June of last year respectively. New York City started dumping 10 percent of its sludge at the 106-mile site in April of last year. As of this June, New York City was dumping 40 percent of its sludge at the 106-mile site. And we expect that by the end of August New York will be dumping 75 percent at the 106-mile site, with 100 percent scheduled for November 20 of 1987.

The six New Jersey authorities were required to dump 25 percent of their total net volume of sludge at the 106-mile site beginning in May of last year. As of this May only 16 percent of their sludge had been ocean dumped in deep water at the 106-mile site. In June 43 percent of the sludge was being dumped at the 106-mile site. However, as a result of recent discussions, the authorities have agreed to dump at least 50 percent of their sludge at the 106-mile site through Labor Day. By the end of this calendar year 100 percent of their sludge will also be dumped at the 106-mile deep water site.

Under the terms of the ocean dumping permits, persistent synthetic or natural materials which may float or remain in suspension in the ocean are prohibited from being ocean disposed. As a result of recent concerns expressed about sludge dumping, EPA instructed all of the nine New York and New Jersey sludge dumpers to review their operating procedures for the handling of floatables and investigate alternative disposal methods for the skimmings and scum resulting from the sewage treatment process.

In response to our request, all of the nine sludge dumpers indicated to us that most, if not all, the floatable materials are trapped in the sewage treatment plants and are sent to landfills or incinerators for disposal. However, the permittees also indicated that there are no standard procedures for the removal of these floatables. Several of them are now actively investigating the installation and use of specialized equipment such as strainers to further address the issue.

Additionally, to ensure compliance with this requirement, EPA has designed and initiated a sampling strategy in order to obtain additional information on the possible presence of floatable materials in the municipal sludge which was ocean dumped.

This strategy includes sampling the sludge directly from the sludge vessels after loading at dockside and prior to their departure for the ocean dumping sites. Sampling is done by casting a scallop dredge into the hulls of the vessels and pulling them up and seeing what's in there.

In addition, EPA has tracked several sludge vessels at the 12-mile site, visually inspected the site after disposal operations were completed, and attempted to recover any floatable material emanating from the sludge barge by sampling the disposal plume. Based on our initial observations and sampling efforts to date, we have yet to recover any evidence to suggest that municipal sludge dumping is contributing to the floatables problem.

With regard to ship-generated wastes, we certainly also support ratification of Annex V. In a related move earlier this year, EPA Region II wrote to approximately 100 commercial shipping companies that travel in waters adjacent to New York harbor to request the description of methods used to dispose of ship-generated wastes at sea. The commercial shipping companies included cruise lines, bulk carriers, and freighters. The responses received indicate that the majority of ships dispose of their wastes at sea, primarily because the U.S. and foreign ports they use lack adequate disposal facilities. Those ships that do not dispose of their wastes employ shipboard incinerators to dispose of kitchen wastes, plastics, and oil-contaminated substances. EPA will be pursuing this matter with appropriate port officials in New York and New Jersey to discuss alternate methods for the disposal of ship-generated wastes such as dockside facilities to receive the ships' wastes.

With regard to new approach, you had asked for some possible new approaches to addressing floatables. Several new approaches that we are taking include the use of floatables observations forms as a part of our beach water quality monitoring program. Many of you see our helicopter flying overhead taking water quality samples. We have also designated specific points in the ocean where they should be looking at filling out a floatables form to see whether any floatables are present. This would, hopefully, work in conjunction with the study that the New Jersey DEP is doing.

In addition, actions that could be taken in the future include, as I said before, the ratification of Annex V; instituting a public awareness campaign to shift consumer trends away from plastics toward biodegradable alternatives, and conduct a study of the sources and extent of the floatables problem.

If we are to make progress in abating this growing problem, all levels of Government and the public must work in concert, taking a comprehensive and integrated approach. Here in Region II, I believe we have made a good start. We hope to continue by increasing awareness of the problem, initiating a dialogue on possible solutions, and, where feasible, implementing abatement measures.

As was stated before, we have not reviewed the details of your proposed bill. However, we can say that we strongly support the intent of S. 633, the Plastics Pollution Control Act of 1987. We will be pleased to provide further assistance on the subject of floatables if appropriate. Again, thank you for the opportunity to participate in the discussions today.

Senator LAUTENBERG. Thank you very much, Mr. Caspe.

You were all very helpful. There are a few questions that I want to ask you.

Admiral, you said something that I want to be sure I understood. Your comments were a little technical and we will have to look at them a little bit to make sure that we understood what you said. Sometimes as we address these things, we lose the meaning as we get consumed by the technical references. So let me put it in a different phraseology.

You said that the State Department might have some problems with our moving ahead while Annex V is not yet ratified in terms of, I think you said, international agreements. I have your text here. Is that true?

Admiral KIME. Yes, sir.

Senator LAUTENBERG. Do you represent the State Department view on these matters? Is that what is supposed to take place? In looking at this bill, are you looking at it in the context of our international foreign policy, or is there a narrower view that you might take?

Admiral KIME. Well, Senator, the State Department has delegated to the Coast Guard the responsibility for heading U.S. delegations to the International Maritime Organization. We have many, many things that we do there. Therefore, we work very closely with them. They set up a shipping coordinating committee, and the Coast Guard chairs the various subcommittees of that and works very, very closely with the State Department.

Also, in drafting of domestic legislation, which I said the Coast Guard has just completed and is in the clearance process within the Government right now. In the course of doing that, we worked very, very closely with the State Department. What I indicated as that being their position is what they indicated to us both in testimony before the House about two weeks ago, the House Merchant Marine and Fisheries Committee, and also in negotiating with us in the development of the legislation. We both share that particular view that it would be damaging to our other efforts at IMO.

Senator LAUTENBERG. If we were to enact this legislation?

Admiral KIME. Yes, sir. Outside of plastic pollution. In addition to that, it would be, we feel, very harmful in our overall shared goal of cleaning up the world's oceans as Annex V is a part of that solution. We have indicated that we have ongoing efforts at IMO right now. I mentioned the guidelines. The United States has not ratified Annex V before, for several reasons. One was the fact that Annex 1 on oil was considered more important, I think, by the Administration, by the Congress, and by the people of this country, followed by Annex II on dumping chemicals—the unseen pollutants that damage. Those have now come into force.

We looked at Annex V and we felt that it needed additional work, and we did not want to indicate that the U.S. was ready to ratify until we saw a mood at the International Maritime Organization that they were ready to go forward with these guidelines that we mentioned, and also some amendments which we feel are necessary. One has already been approved and put in place ready to be approved once it comes into force. But you can't amend it until it comes into force.

So we see a groundswell, a tremendous groundswell of international support to solve this international problem, and we feel that if the United States acts unilaterally, it will greatly jeopardize that effort.

Senator LAUTENBERG. Should we put all our eggs in the Annex V basket? Suppose we ratify and there isn't enough other Nations signing to go over the 50 percent tonnage level necessary or maybe it takes them a lot longer and we still have not discussed exactly how that treaty is implemented. As I understand it, we are now talking about fairly long distances for surveillance or monitoring. Do you think we ought to just wait?

Admiral KIME. Senator, what I said was we had no problem with the passage of the legislation nor with beginning the development and completion of the regulations that would implement that legislation. What we have said, though, that we do not think that the effective date of the regulations should, if at all possible, precede the coming into force internationally of Annex V.

When a country is negotiating internationally to develop the best possible international agreement on an international problem, it gets other countries to go along, and then comes back and says, well, you've done this but that's still not enough for us, we're going to act unilaterally anyway, this creates some problems.

We cannot enforce Annex V by ourselves. They can go 201 miles outside and dump anything they want to. We need the support of the Government of the U.K., the Government of Norway, the Government of Greece, all of these countries for Annexes 1 and 2 have enforced it to the extent that we have a 99 percent compliance rate.

Senator LAUTENBERG. What good is Annex V going to do us with the Fresh Kills landfill? Is that going to help cure that problem? Is casual dumping within a couple of miles off our coast going to be affected by Annex V?

Admiral KIME. No, it wouldn't, Senator. That's why when I made my comments I said we were only talking about things from 3 miles out to 200 miles. Again, I think this is only a technical issue, because by the time the legislation gets through and the regulations are drafted and put into force, that we believe that Annex 5 will come into force. We would hope that at a minimum there is some period of grace to give us a chance to bring them into force within the time frame I have talked about.

Senator **Lautenberg**. We encourage you to help us with this legislation, but my personal view is that if we continue to talk about Annex V, it's possible that our legislation will be put on the back burner and meanwhile there are thousands more birds, seals, sea turtles, whales destroyed by the junk that floats along here and doesn't get helped at all by Annex V.

I think the best way to put pressure on other Nations is to say we are serious about it, we are going to spend the money, we are going to have the surveillance, we are going to have the monitoring mechanism to make sure that when you get close to our coast, brother, you better not dump any of that stuff. And then maybe other countries will say, hey, the U.S. is serious enough to go ahead and do it on their own and therefore we better jump into that thing because that junk will be left to the tides to take it to other places.

Maybe it will cause those vessels who are afraid to get caught inside U.S. territorial waters and dump out there to say, don't do it near the American coast because they can put you in jail for that.

That's a matter of perspective on how these things get done. I don't like waiting. I don't think there is so much of an overlap, so much of a redundancy that we minimize our opportunity to get on with Annex V and any other agreement to help protect ourselves.

Admiral **Kime**. Senator, as I said, we strongly support the movement of legislation and ratification of Annex V and implementing legislation and the other aspects you have in your bill. The Administration has not commented on those yet, but I would personally say that I think you have taken some very progressive steps there. We don't want to hold that back. All we're saying is that once this is in place, the regulations are developed for the Annex V portion of it, we feel there should be a reasonable period of time for it to come into force internationally before we go unilaterally.

I have had a great deal of experience in international negotiations and getting the international community to come along. I was the technical director of the U.S. delegation to the convention on pollution in 1978 that revised Annex I and II of Marpol and brought that into force.

Senator **Lautenberg**. How long did they take to come into force from their time of initiation?

Admiral **Kime**. After the protocols were completed in 1978, Annex I came into force in October of 1983 and Annex II came into force in April of 1987.

Senator **Lautenberg**. How long has Annex V been around? When did the first Nation ratify it?

Admiral **Kime**. Annex V was completed in 1973, Senator. I have indicated why it hasn't been ratified, and that is because of the overriding priorities that have been placed by everyone on Annex I and Annex II and also some of the effort we felt needed to be done to Annex V to make it a better document. Once we play our card of ratification, we lose a lot of clout with the international community. We now have them moving toward this.

Senator **Lautenberg**. It's a heck of a pace they're moving at. We're liable to lose several precious species out there by the time it's done. Unfortunately, you're sequencing these things, and I don't see any problems, very frankly, in paralleling these. One action need not wait for another to take place.

Would you agree that if we can start protecting our beaches and our waters and our marine life, that we ought to do so as quickly as possible?

Admiral KIME. I agree, Senator.

Senator LAUTENBERG. It doesn't sound like it, Admiral, I just tell you. I hear you giving what I must say, in all due respect—and I do respect you and your service enormously; I am very close with the Coast Guard—what I hear is the party line. I must tell you that. What I hear is, okay, listen, we don't want to rush, we don't want to move. If these other countries want to come along and get going on this thing, great, but we shouldn't wait while they throw their junk and we throw our own junk all over the place.

Again, it's not to minimize your effort. Honestly, I think there is a difference in the urgency applied to this.

I wanted to ask, Mr. McCann, you talked about how perfect things are here on the beach. I would commit you to having a citizens survey. Maybe if you have some time, sit down on the boardwalk on a nice day and tell people out there that the beach that they're walking on at Sandy Hook is perfect, and see what kind of response you'll get. I think it would be educationally helpful.

Does the State have the capacity, honestly, to take care of the problems that we have? I note that Commissioner Dewling strongly supports this legislation. But he also says that one major component towards eliminating pollution of our ocean would be through the implementation of Annex 5 of Marpol.

In your judgment, should we parallel these actions? Do you see any reason for us to wait with our legislation while we wait for the international agreement to be ratified?

Mr. McCANN. Certainly, from our perspective, we think it should move ahead. All of this is a part of a number of pieces to solving the problems that we are experiencing. We would encourage moving ahead as part of the overall answer to dealing with ocean pollution. The ability of the State to take on those responsibilities are somewhat limited. We have made efforts and have some initiatives in a number of areas to do those things at the State level. We certainly do not have the resources that the Federal Government can bring to task to do monitoring and surveillance of a number of the activities that I think affect the ocean. Those that we can effectively work on we have made efforts to do that. We think more needs to be done, and we are trying to work with the Federal agencies to see what we could do to support them although we are limited in what we can offer.

Just to comment, the keep-it-perfect anti-litter campaign is one that is put out there to make people aware that it is a serious problem. The litter is a major contribution to what we find on the beaches, very often disposed of by people who are visiting the beach. And I know that those who are residents of the coastal communities are terribly offended, as they should be, by the mess that they find on their beaches following a heavily utilized weekend of visitors from other areas. That whole program is to have everyone encouraged as to what needs to be done both by the residents and most often the visitors to keep the beaches what they are and why they come to visit them in the first place.

Senator LAUTENBERG. Yes. I don't think that we ought to say that all is terrible out there, by a long shot. But I also think that when we have a seductive picture like that, that it ought to encourage us to get on with the task. I am pleased to hear your suggestion that New Jersey can take care of its own needs and that perhaps we don't need as much Federal help here as other places. That independence is encouraging, and it also frees up the budget a little bit in case we have to distribute moneys elsewhere.

The thing I want to confirm, in short form, now, Mr. Caspe, what is the deadline for closing the 106-mile site? Is that under your jurisdiction?

Mr. CASPE. New Jersey communities will be the last ones out, scheduled for December 31, this year.

Senator LAUTENBERG. No; the 106.

Mr. CASPE. Oh. Well, when they move out, the 12-mile site will be closed.

Senator LAUTENBERG. Right. And is there a target for closing the 106-mile site? Is there anything in the statutes?

Mr. CASPE. The schedule, the designation expires in five years from its first use. The first use of the site was in April of 1986. So, April of 1991 would be when the site is up for redesignation. Now, permits that they will discharge under will be three-year permits. However, right now none of them is discharging under permits, they are discharging under court order where there was a lawsuit some years ago and apparently the Federal Government lost.

Senator LAUTENBERG. Right.

Mr. CASPE. We now have applications in from the New York communities. The New Jersey communities are scheduled to give us the applications on August 1. We are reviewing those applications, and one of the things that we will review very carefully is alternatives: what's available and what might be available, what studies might be performed in what period of time to further explore alternatives. And all that will come into account in the permits that will be issued eventually.

Senator LAUTENBERG. Just very quickly, Mr. McCann, what do you think of the monitoring effectiveness? Do you have a view on the dumping at the 12-mile site or just dumping generally?

Mr. MCCANN. Well, we have had numerous discussions. Our position has been that it has not been adequate. There have been measures to step up that surveillance, but as far as monitoring and surveillance goes, you can never do enough. There is always a portion that is going unmonitored and very often those who would be likely to pollute or dump look to take advantage of that. So I don't think you can do enough.

Senator LAUTENBERG. What is the status, Mr. Caspe, of the black box device? We hear a lot of talk about it, obviously people from the environmental groups don't think much progress is being made. Is there?

Mr. CASPE. Well, I can tell you a little bit. But I think the experts on the black box—silver box, actually—is the Coast Guard.

Senator LAUTENBERG. Admiral.

Admiral **Kime**. Senator, the ocean dumping and surveillance system was a project the Coast Guard initiated as a research and development project. The research and development portion was completed, as Commander Eldridge said, in 1986. We have three of these installations installed on barges right now, on vessels right now. We have a fourth one that is also one of the prototypes. That is at Governors Island. This was turned over last summer to our engineers to develop a commercial specification from which these could be manufactured. That effort has now been completed. We expect the cost to manufacture one of these so-called black boxes is about $10,000 if they were ordered in multiples of ten.

The black box really is an electronics package, two antennas, and three through-hull sensors that measure the draft of the barge. What it does, it periodically records the draft of the barge, which is an indication of whether it's dumping or not. It also records the position of the barge and the time, and there is a permanent record of that. This is run through a computer on Governors Island and an antenna relay system at Sandy Hook. The cost to install one of these systems aboard a barge is about $9,000. That is what our people estimate.

Senator **Lautenberg**. $9,000 on top of the purchase?

Admiral **Kime**. $9,000 on top of the purchase, plus drydocking. So you are probably talking a total of about $20,000 to $25,000 per installation of one of these systems.

Senator **Lautenberg**. But you're satisfied that you've got the technology now, that that technology is around?

Admiral **Kime**. Yes, sir. We do have the technology, and I think now that we are satisfied that we have a document from which it could be procured commercially.

Senator **Lautenberg**. Would it transmit that information via radio wave?

Admiral **Kime**. It transmits through VHF FM radio signals, which basically have a line of sight trajectory. So it depends on how high the antenna is, how far offshore it goes. If we were to put the antenna high enough, yes, it would go all the way out to 106, 106 miles. But that is not really important because the box records all the information, plays it back to you. Also, when it reports to you the data every two minutes, it tells you the condition of itself. It takes its own temperature, in a way of speaking. Also, it tells you if it's been tampered with.

Senator **Lautenberg**. So you have a record.

Admiral **Kime**. So it is reliable evidence, yes.

Senator **Lautenberg**. Okay. How effective would radar be in monitoring, Commander?

Admiral **Kime**. Again, Senator, it's the ability to get an antenna high enough to go out there. Probably the 12-mile site, if we had a high enough antenna, you would be able to monitor out there. But to be able to pick up something the size of a barge at 106 miles from shore is not realistic.

Senator **Lautenberg**. Satellite, NOAA satellites?

Admiral **Kime**. There is some work that is being looked at by the Coast Guard through the commercial satellite system, Geostar, which has unfortunately been held back a little bit because of the space shuttle tragedy. They don't have the satellites in place. But that would be another way of monitoring also via a spinoff on the ODSS system that we now have.

Senator LAUTENBERG. Mr. Caspe, I just wanted to be sure of one thing you said. In terms of Red Hook and the North River, you said Red Hook is operating. Is it handling the full load for primary treatment yet?

Mr. CASPE. No. It's handling about 40 million gallons a day. It's around six or seven million gallons a day that is still awaiting completion of a pump station.

Senator LAUTENBERG. All right. That is raw stuff that is still being pumped into the bay there?

Mr. CASPE. Yes.

Senator LAUTENBERG. What is the schedule for secondary treatment at both these plants? As I remember, Red Hook was going to be up to secondary ahead of North River, even though North River was onstream first with its primary.

Mr. MCCANN. No. North River's schedule, in the court order, is 1991.

Senator LAUTENBERG. Do you see them making it?

Mr. MCCANN. I see them considerably beating that date. They may beat that date by a year or a little more. They are making very good progress at this stage of the game.

Senator LAUTENBERG. How about Red Hook?

Mr. MCCANN. I believe Red Hook was a 1990 schedule or something in that period.

Senator LAUTENBERG. I thought it was originally 1989. But was it 1989 or 1990?

Mr. MCCANN. I think it was 1990.

Senator LAUTENBERG. Do you have any appraisal, any forecast about that one?

Mr. MCCANN. They will meet both those dates. Whether they will be able to bring in Red Hook a little bit earlier, at this stage of the game I can't really tell that.

Senator LAUTENBERG. Are there any other raw sewage discharge points in this general vicinity?

Mr. MCCANN. There are still some relatively minor ones in New York City which they are in the process of picking up. I mentioned around six million gallons in the Red Hook area. There is also a couple of million gallons at the tip of Staten Island, the Tottenville area. And there is also a couple of million gallons in Brooklyn at another location, I think, in Bush terminal. So you figure there is around 10 million gallons, or somewhere in that vicinity, of raw sewage still.

Senator LAUTENBERG. Do you have any idea what is the status of keeping Fresh Kills garbage from drifting off into the waters? Commander, I don't know whether you're familiar with it, since you're out of the region now.

Mr. ELDRIDGE. Well, I can say that as far as the court suit that is going back and forth, EPA has been—as far as Woodbridge, we have not been a participant in that. But I can tell you that we have inspected the Fresh Kills landfill as well as all of the marine transport stations in New York City for the sanitation marine transfer stations. We have inspected all of those two times via helicopter, and the most recent one around three weeks ago, and have not found any significant spillage or any real significant movement.

Senator LAUTENBERG. Mr. McCann, the States are engaged in this as well. What do you see?

Mr. McCANN. We have joined the litigation, joined Woodbridge in the suit, which is in the Federal courts. We have likewise gone by helicopter to examine, and I think there is certainly a demonstration of materials that either are not finding their way to Fresh Kills and are falling off barges and then resulting on the shores in the Woodbridge area. There is also blown material off, which is quite evident in photographs.

Senator LAUTENBERG. You think it's fairly current? Could you say when the last trip was made over that area, was it within a week or two or a month?

Mr. McCANN. Ours was a few months ago when we were last there. But we haven't seen much improvement or progress that would indicate that the problems are corrected.

Senator LAUTENBERG. If there was any way that you could help us by having another overflight there, it would be appreciated, and if you could furnish the committee with that information. Is it possible, do you think?

Mr. McCANN. We can do that, and we can either have one of your staff accompany us or provide you with the photographs, whatever you would like.

Senator LAUTENBERG. Mr. Caspe, what is the earliest date that we might close that 12-mile site? I see we're gaining on it, and I heard your testimony, and it's encouraging.

Mr. CASPE. Well, at this stage of the game, the earliest date that the Federal Government can guarantee is December 31. That's the date that we have.

Senator LAUTENBERG. There is not going to be any slippage on that date; right?

Mr. CASPE. No. I have no expectation of slippage at all.

Senator LAUTENBERG. Good. The sooner the better, obviously. Every day that goes by, we have to pick another ocean dump site, but we hope that it will be a better accommodation.

Well, we thank you all very much for being with us.

If I disagreed with you, it was always with respect, Admiral. I know how hard you particularly, and your service, work on these problems. You have the full responsibility, so it's easy to look at one part of it and criticize—and we don't mean to do that. But we do enlist your urgency, and I hope you will feel free to call on us as we will call on you and thank each one of you for your testimony. It has been very helpful.

With that, this session of the subcommittee hearing is closed. Thank you all very much.

[Whereupon, at 12:23 p.m., the subcommittee was adjourned.]

[Statements submitted for the record follow:]

COA clean ocean action

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Statement on behalf of Clean Ocean Action by Cindy Zipf, Coordinator, before the Senate Sub-Committee on Environmental Protection , on plastic pollution in Asbury Park, N.J. July 7, 1987. Clean Ocean Action is a broad-based coalition of over 70 organizations representing over 200,000 individuals, dedicated to clean up and protect the waters of the New Jersey/ New York coasts, known as the New York Bight.

To begin, I would like to welcome this Subcommittee on Environmental Protection and commend you, Senator Lautenberg, for bringing this field hearing to the Jersey Shore; a most fitting location to engage in problems and solutions of plastic and floatable pollution in our marine environment. The devastating effects have become increasingly clear at alarming rates, while efforts to control the deadly tide have gone unchecked.

A case in point. On April 26, 1987, Clean Ocean Action held the annual spring beach clean up (this one orgainzed by a coalition of high school students called COAST - COA Student Trash-bashers.) This group of 150 dedicated individuals collected the following in 2 hours on total beach area of 1 mile.

- 113 paper bags of bottles and cans (1500 pieces)
- 345 paper bags of plastic containers and sheet plastic
- 116 paper bags of styrofoam
- 4 paper bags of hospital supplies (incl. hypo needles
- 444 plastic tampon applicators
- 64 tires
- 1 50 lb blob of tar
- misc. items included: feul tank, 2 garbage can lids shoes, refridgerator door, milk crates, chairs, toys, and on and on.

The event required 4 trips to the land fill with dump trucks, and 1 pick up truck filled with cans and bottles which were taken to the recycling center. Over 70% of the material was plastic with no place to go but the land fill.

Three days later the beaches were covered once again with the unsightly, dangerous debris.

The problem with plastics is that they are persistant. In roughly 25 years we have become "a-throw-away" society. The disposables have entered every aspect of our daily lives and the result, we are now left with and continue to generate a non-disposable disposable nightmare. In fact, as a monument to our society, the Staten Island Landfill will soon be the highest point on the east coast from Maine to Florida.

In the marine environment these non-biodegradable products drift and float forever maiming or killing countless marine animals each year through entanglement, ingestion, or entrapment. Boaters suffer from entangled props and clogged intake valves. If by currents, winds or chance they wash adshore, they leave beaches unsightly, damaging the aesthetic value of the Jersey Shore, and in some cases a public health threat.

The smoking gun for the source of the marine debris is difficult to pinpoint. In the highly urbanized arena north of Sandy Hook, over 18 million people live and work using vast quanities of the non-disposable disposables. The estuary is plagued by illegal dumping, commercial shipping and cruise liner traffic, street filth from run off, combined sewer systems, mismanaged sanitary landfills, inadequate or non-existant sewage treatment facilities, the careless boater or picnicer, and the litter dropped by unconcious citizens. These all play significant roles in the endless parade of floating trash. However, I have yet to find a piece of trash which states,"I escaped the Staten Island Landfill ," or "lost at sea from the SS?" to identify to exact sources of the trash. This makes accountability almost impossible to determine. Much of the waste washes up along the Bayshore and northern beaches, but much more is left to disperse throughout the oceans.

As overwhelming as the problem is there are solutions. Aggressive actions and leadership are required of our elected officials. Expensive sanctions and incentives are required to reduce and ultimately eliminate the problems with plastics. One such solution is S. 633 the Plastic Pollution Control Act,introduced by you, Senator Lautenberg. This bill is the most comprehensive effort to date to control the deadly tide of plastics into the marine environment. As you know it is strongly endorsed by COA including the American Littoral Society. Most importantly, the bill focuses on domestic sources. Once passed, this bill will make it federal offense to drop plastic in, or near a water body which may lead to the ocean. It would also include goverment officials who do not enforce the law. An offense is punishable by both criminal and civil penalties including stiff fines and jail terms . It provides incentives to citizens to report violators by providing that part of the fine may go to those leading to the arrest and conviction. The legislation includes a study to find methods of reducing plastics, and initiates an educational program to inform the public.

The Bill also addresses international sources by ratifying Annex V of the MARPOL Treaty (the International Convention for the Prevention of Pollution from Ships) Although our ratification is only a piece of what is necessary, (it must be passed by 15 nations representing 50% of total tonnage) it will bring us closer to a full adoption. It may also encourage other nations to join.

Here in NJ, there are efforts being made to control floatables. Clean Ocean Action has sponsored events and activities to focus attention and identify solutions. Today, COA together with the American Littoral Society, and the Marine Mammal Stranding Center, launch our public awarness campaign. Legislation has been introduced to ban certain plastic products such as the plastic tampon applicator. The Dept. of Environmental Protection is doing a study on sources. They have also instituted a non-point source pollution control program to inform coastal communities as to how they can control pollution.

These are all welcomed efforts. However caution must be taken not to view marine pollution source control and beach clean ups as the solution. The real long term solution to the plastic crisis is to REDUCE the volume of plastic generated. There are perfectly adequate bio-degradable alternatives available. These products should be used. At minimum the cost of the disposal of non-degradable disposable containers where it belongs ---on the manufacturers and users of plastics. The petroleum industry has gone basically unchecked in its generation and diversification in uses for plastics. However, not included in the cost of your cheap plastic soda, oil, etc. container, is the long term (generations long) cost of storage at landfill and the treatment of toxics generated through the production of plastics. A ban should be placed on all non-degradable products where perfectly adequate bio-degradable products are availble. Deposits and recycling of all containers must become a part of an overall plastic reduction policy. Emphasis is being placed on the creation of degradable plastics. Clean Ocean Action is highly concerned that not enough is known about these products. What do they break down into? Will it harm the ecosystem? Before any mass marketing and endorsement of all plastics to degradable ones, careful studies must be done to insure the safety of these products.

Before I conclude, I would like to mention several issues relating to ocean dumping. It is a known fact, that there is very little minding of our offshore waters. Recently, sludge balls, tampon applicators and condoms washed ashore in Ocean County. No one has any clue as to where this material came from. We have 7 dumpsites located off the coast of NJ. No where else in the country do they do what is allowed off the Jersey Coast. In 1986 the US Coast Guard in NY Harbor, charged with surveillance of all sites and whose budget has been drastically cut, counted over 2500 dumps of sewage sludge of which they activly monitored 10 %. In this age of technological advancement, we are s 4till dumping wastes into the ocean with few restrictions and little surveillance. It is difficult for me to complain about surveillance of a practice I feel is wrong to begin with;

however, we do have the technology to mechanically observe goings on off our coast until such time as we can stop the dumping. Senator, it is unconscionable that after 10 years we do not have this technology on all vessels dumping in our ocean.

In general, ocean dumping is an embarrassment. Currently, the most outrageous of all is DuPont. DuPont, one of the most sophisticated companies in the world is continuing to apply for permits to dump wastes that EPA had them under court order to stop since 1979. We hope you will join our effort to get DuPont out of the ocean, the last industrial polluter at the Industrial Dumpsite.

In condlusion, today our environment bears the brunt of the "throw-away" society, overloaded landfills, plastic beaches, and dying marine life, and in the case of NJ waters, the title, "the Ocean Dumping Capital of the World". Only with strong actions from our elected officials, will the plastic tide turn, and a walk along our treasured beaches will not mean a trip to the garbage can.

U.S. Department
of Transportation
United States
Coast Guard

Commandant
United States Coast Guard

Washington, D.C. 20593-0001
Staff Symbol:
Phone:

JULY 7, 1987

STATEMENT OF REAR ADMIRAL J. WILLIAM KIME

U.S. COAST GUARD

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

JULY 7, 1987

GOOD MORNING, MR. CHAIRMAN:

I AM REAR ADMIRAL J. WILLIAM KIME, CHIEF OF THE COAST GUARD'S OFFICE OF MARINE SAFETY, SECURITY AND ENVIRONMENTAL PROTECTION AT COAST GUARD HEADQUARTERS IN WASHINGTON, D.C. IT IS A PLEASURE FOR ME TO APPEAR BEFORE YOU TODAY TO PRESENT OUR COMMENTS AND RECOMMENDATIONS AS TO THE BEST MEANS TO CONTROL PLASTIC POLLUTION IN THE OCEANS.

IN PREVIOUS TESTIMONY BEFORE OTHER CONGRESSIONAL COMMITTEES, I HAVE STATED THE COAST GUARD'S CONCERNS REGARDING THE HAZARDS TO THE MARINE ENVIRONMENT FROM GARBAGE, PARTICULARLY PLASTICS AND OTHER SYNTHETIC MATERIALS INCLUDING SYNTHETIC FISHING NETS; AND I STRESSED THE IMPORTANCE OF ESTABLISHING INTERNATIONAL STANDARDS TO SOLVE AN INTERNATIONAL PROBLEM THROUGH IMPLEMENTATION OF ANNEX V OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS REVISED BY THE 1978 PROTOCOL RELATING THERETO (MARPOL 73/78). ANNEX V WOULD NOT ONLY PROHIBIT THE DISCHARGE OF PLASTICS INTO THE OCEANS OF THE WORLD, BUT WOULD ALSO REGULATE DISPOSAL OF FORMS OF GARBAGE OTHER THAN PLASTICS, GENERATED DURING THE NORMAL OPERATION OF SHIPS, BEYOND THE TERRITORIAL SEA UP TO 25 NAUTICAL MILES FROM THE NEAREST LAND. I ALSO EMPHASIZED THAT EARLY U.S. RATIFICATION AND IMPLEMENTATION OF ANNEX V WOULD DEMONSTRATE TO THE WORLD OUR RESOLVE TO PROTECT THE MARINE ENVIRONMENT GIVING DUE CONSIDERATION TO THE JOINT EFFORTS OF THE INTERNATIONAL COMMUNITY.

MR. CHAIRMAN, THE COAST GUARD'S SUPPORT FOR EARLY RATIFICATION REMAINS STRONG, AND THIS IS REFLECTED BY OUR ACTIONS SUBSEQUENT TO TWO PREVIOUS CONGRESSIONAL HEARINGS.

IN THE FALL OF 1986, THE COAST GUARD WORKED EXTENSIVELY WITH THE DEPARTMENT OF STATE TO PREPARE THE DOCUMENTS NECESSARY FOR RATIFICATION OF ANNEX V OF MARPOL 73/78. AS YOU MAY KNOW, MR. CHAIRMAN, ON FEBRUARY 9, 1987, THE PRESIDENT TRANSMITTED ANNEX V TO THE SENATE FOR ITS ADVICE AND CONSENT TO RATIFICATION.

ALSO IN THE FALL OF 1986, THE COAST GUARD WORKED CLOSELY WITH THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) AND THE MARINE MAMMAL COMMISSION (MMC) TO DEVELOP A U.S. PROPOSAL RECOMMENDING THE DEVELOPMENT OF INTERNATIONAL GUIDELINES TO ASSIST IN THE EFFECTIVE IMPLEMENTATION AND ENFORCEMENT OF ANNEX V OF MARPOL 73/78. THIS PROPOSAL WAS SUBMITTED TO THE 24TH SESSION (FEBRUARY 16-20, 1987) OF THE INTERNATIONAL MARITIME ORGANIZATION'S (IMO) MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC 24) AND WAS UNANIMOUSLY ACCEPTED.

CURRENTLY, THE U.S. IS TAKING THE LEAD IN PREPARING THESE DRAFT GUIDELINES WITH THE ASSISTANCE OF INFORMATION RECEIVED FROM IMO MEMBER GOVERNMENTS AND INTERNATIONAL SHIPPING, TRADE AND OBSERVER ORGANIZATIONS FOR SUBMISSION TO THE 25TH SESSION OF THE MEPC SCHEDULED FOR NOVEMBER 30 - DECEMBER 4, 1987.

THE SCOPE OF THESE GUIDELINES WILL INCLUDE: TRAINING, EDUCATION, AND INFORMATION PROGRAMS FOR SEAFARERS AND THE PUBLIC ON THE MARINE DEBRIS PROBLEM; MEANS TO MINIMIZE THE AMOUNT OF POTENTIAL GARBAGE; SHIPBOARD STORAGE AND HANDLING PROCEDURES FOR GARBAGE; SHIPBOARD EQUIPMENT FOR PROCESSING GARBAGE; RECEPTION FACILITIES; AND MEANS TO ENSURE COMPLIANCE WITH ANNEX V OF MARPOL 73/78. INCORPORATED IN THE LATTER WILL BE PROVISIONS FOR CONTROL AND ENFORCEMENT BY NATIONAL AUTHORITIES, AND POSITIVE INCENTIVES AND VOLUNTARY MEASURES TO DISCOURAGE POTENTIAL VIOLATIONS.

MR. CHAIRMAN, I WANT TO EMPHASIZE THAT THIS U.S. INITIATIVE HAS BEEN EXTREMELY WELL RECEIVED BY THE INTERNATIONAL COMMUNITY BECAUSE IT REINFORCES A FUNDAMENTAL PRINCIPLE OF MARPOL 73/78; THAT IS, TO CONTROL POLLUTION OF THE OCEANS FROM SHIPS THROUGH GLOBAL AS OPPOSED TO UNILATERAL STANDARDS. I BELIEVE WORKING THROUGH MARPOL 73/78 WILL ULTIMATELY FACILITATE BETTER INTERNATIONAL COOPERATION REGARDING COMPLIANCE WITH THE REQUIREMENTS. FOR EXAMPLE, MR. CHAIRMAN, WE ENJOY A BETTER THAN 95% COMPLIANCE RATE FOR ANNEX I OF MARPOL 73/78 PROVISIONS COVERING POLLUTION BY OIL FROM SHIPS. I AM CONVINCED THIS IS LARGELY DUE TO THE GLOBAL ACCEPTANCE OF ANNEX I STANDARDS.

THE ADMINISTRATION HAS NOT COMPLETED THEIR REVIEW OF S.633, THEREFORE I AM UNABLE TO COMMENT FULLY ON THAT BILL. I WOULD HOWEVER LIKE TO PROVIDE SOME GENERAL COMMENTS WHICH PERTAIN TO THIS AND OTHER LEGISLATIVE PROPOSALS WHICH HAVE BEEN INTRODUCED TO IMPLEMENT ANNEX V.

THE ADMINISTRATION BELIEVES THAT RATHER THAN ENACTING SEPARATE "FREE STANDING" LEGISLATION TO APPLY THE ANNEX V REGULATIONS, THAT THEY BE APPLIED THROUGH APPROPRIATE AMENDMENTS TO THE ACT TO PREVENT POLLUTION FROM SHIPS (APPS), 33 U.S.C. 1901 ET SEQ. THE REASON FOR THIS IS THAT APPS PROVIDES THE LEGAL STRUCTURE FOR APPLYING THE PROVISIONS OF MARPOL 73/78 ANNEXES WITHIN THE CONTEXT OF THE OVERALL CONVENTION REGIME. ESPECIALLY IMPORTANT IN THIS CONNECTION IS THE MARPOL 73/78 ANNEX AMENDMENT PROCEDURE PRESCRIBED IN ARTICLE 16 OF THE CONVENTION AND IMPLEMENTED BY SECTION 10(b) AND (c) OF APPS. OF COURSE, ALL OF THE AMENDMENT PROCEDURES, REGULATORY STRUCTURE, AND ENFORCEMENT PROVISIONS CURRENTLY CONTAINED IN APPS COULD BE DUPLICATED IN "FREE STANDING" LEGISLATION. HOWEVER, SUCH AN APPROACH IS LESS EFFICIENT AND WOULD NOT FACILITATE A CAREFUL, COMPREHENSIVE REVIEW OF THE IMPLEMENTING LEGISLATION OF THE CONVENTION (INCLUDING THE 1978 PROTOCOL), WHEN IN THE FUTURE, MODIFICATIONS TO PARTS OF ITS REGIME ARE FOUND TO BE NECESSARY. SHOULD IT BE NECESSARY TO APPLY SPECIAL POLICIES TO PARTICULAR ANNEXES OF MARPOL 73/78, THIS CAN CERTAINLY BE DONE WITHIN THE CONTEXT AND FRAMEWORK OF APPS. THE IMPLEMENTING LEGISLATION THAT THE COAST GUARD IS PREPARING WOULD IMPLEMENT ANNEX V THROUGH AMENDMENTS TO APPS. WE BELIEVE THAT OUR IMPLEMENTING LEGISLATION WOULD BE THE MOST EFFECTIVE MEANS TO ACCOMPLISH THE BASIC GOALS OF THE NECESSARY LEGISLATION.

SECOND, ARTICLES 4, 5, AND 6 OF MARPOL 73/78 PROVIDE FOR ENFORCEMENT ON A PORT STATE/FLAG STATE BASIS. UNILATERAL COASTAL STATE, TERRITORIAL SEA AND EEZ APPLICATION OF THE ANNEX V REGULATIONS BY THE U.S. COULD HAVE NEGATIVE EFFECTS ON THE ENTRY INTO FORCE OF ANNEX V, THE ACCEPTANCE AND RECOGNITION OF THE UNITED STATES AS A CONTRACTING STATE TO ANNEX V BY THE OTHER CONTRACTING STATES, AND THE POTENTIAL FOR BROAD, GLOBAL ACCEPTANCE OF THE ANNEX V REGIME.

THE U.S. STATUTORY REGIME IMPLEMENTING ANNEX V SHOULD HAVE A REASONABLE TIME FOR ANNEX V TO ENTER INTO FORCE, BEFORE MAKING THE REGULATIONS EFFECTIVE. ANNEX V WILL ENTER INTO FORCE TWELVE MONTHS AFTER THE DATE ON WHICH NOT LESS THAN FIFTEEN (15) STATES, REPRESENTING FIFTY (50) PERCENT OF THE GROSS TONNAGE OF THE WORLD'S MERCHANT SHIPPING HAVE BECOME PARTIES TO IT. CURRENTLY 27 STATES REPRESENTING 41.85 PERCENT OF THE WORLD'S SHIPPING TONNAGE HAVE RATIFIED ANNEX V.

WE BELIEVE THAT AN APPROACH CAN BE ADOPTED WHICH WOULD ENCOURAGE OTHER STATES TO BECOME PARTIES TO ANNEX V, PROVIDE FULL PROTECTION TO THE U.S. COAST AND DEMONSTRATE TO OTHER CONTRACTING PARTIES THAT THE U.S. WILL UTILIZE THE MARPOL 73/78 REGIME. THE SPECIFICS OF THIS APPROACH ARE CURRENTLY UNDER REVIEW WITHIN THE ADMINISTRATION.

MR. CHAIRMAN, THE COAST GUARD IS PREPARING A LEGISLATIVE PROPOSAL TO IMPLEMENT ANNEX V THROUGH AMENDMENTS TO THE APPS WHICH WE BELIEVE WILL RESOLVE THE CONCERNS I HAVE MENTIONED. WE WILL BE PLEASED TO WORK WITH YOUR SUBCOMMITTEE ON SUGGESTED IMPLEMENTING LANGUAGE OR OTHER MATTERS RELATING TO ANNEX V.

IN CLOSING I WOULD ASK, MR. CHAIRMAN, THAT YOUR SUBCOMMITTEE STRONGLY SUPPORT THE EARLY RATIFICATION AND PASSAGE OF LEGISLATION TO IMPLEMENT THE PROVISIONS OF ANNEX V OF MARPOL 73/78.

THANK YOU, MR. CHAIRMAN. I WOULD BE PLEASED TO ANSWER ANY QUESTIONS YOU OR MEMBERS OF THE SUBCOMMITTEE MAY WISH TO ASK.

SENATE FIELD HEARING - SENATE BILL 633
PLASTIC POLLUTION CONTROL ACT OF 1987
JULY 7, 1987
ASBURY PARK, NEW JERSEY

TESTIMONY OF GEORGE G. MCCANN
DIRECTOR OF THE DIVISION OF WATER RESOURCES
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

OPENING REMARKS - Thank you for the opportunity to speak at this field hearing on this important topic. The disposal of plastics is a priority issue for the Department as it is for the nation.

Let me start out by saying that the New Jersey Department of Environmental Protection strongly supports this legislation and state legislation like it that would limit the problem of plastics pollution in our waters. The Department also supports the ratification and implementation of Annex V to the International Convention for the Prevention of Pollution from Ships (MARPOL).

Status of the Department's activities. The following is an update of the many activities that the Department has undertaken to address the issues of ocean pollution, including plastic pollution of our coastal waters.

- In a similar fashion to section 107 of S 633, the Department has been conducting two studies that would effect the reduction of plastic pollution.

- Vessel Pollution Study. The Department authorized a study to be conducted by Admiral Price regarding the discharge of ocean going vessels. The study has been completed and is currently available.

- That study concluded that the most probable originators of litter on New Jersey beaches are visitors to the land side of the beach or operators of recreational craft along the coastal waters of New Jersey.

- Litter from commercial ships and fishing vessels may come ashore in small quantities throughout the year with the main occurrence being in the winter months. The most likely location for washup of vessel originated material is the northern end of the New Jersey coastline.

- One means of limiting the plastic pollution of the ocean is the implementation of Annex V.

- The winds and currents off of the New Jersey coastline tend to carry materials disposed from marine sources away from the coast, except: 1) When materials are discarded during the winter months; 2) Materials are discarded close to shore; and 3) Heavy weather such as northeasters, hurricanes, and cyclonic storms may wash materials onto the New Jersey beaches from long distances.

- The Three E's (Engineering, Enforcement and Education) are important factors in eliminating pollution from plastics. Encouraging biodegradable plastics and providing facilities for proper land-based disposal and recycling are important engineering factors. Education and public awareness efforts of our Department will be discussed later. Finally, enforcement actions should be increased but the success of and main efforts toward stopping ocean pollution from marine vessels rest with proper engineering and public awareness.

- Floatable Study. This study is currently underway. The literature search and beach debris survey and classification has been completed. The surveillance of sources and design of the floatable study is currently underway.

- Public Awareness "Keep It Perfect" Campaign. In an effort similar to section 108 of S 633, New Jersey has embarked on a major public awareness campaign to bring the problem to light and to make people aware that they are part of the cause and of the solution. Materials are being distributed to all of the New Jersey coastal communities.

- A shore symposium was held on March 11, 1987 entitled "Coastal Water Quality and You/Us". The topics of water quality, 1985-1986 Coastal Monitoring Program Report, Floatable Study, and the Maritime-Originated Solid Waste Study were all discussed at this symposium.

- The Department has taken these steps because of the problem that New Jersey has experienced with beach litter. Whether the problem is caused by plastic hygienic devices, plastic bags and bottles, wood, or other materials discarded into the ocean or at the beach, the sources must be identified and eliminated.

- The Department feels, as was stated in Commissioner Dewling's letter of March 17, 1987 to you, Senator Lautenburg, that one major component towards eliminating pollution of our ocean would be through the implementation of Annex V of MARPOL.

- Until world-wide acceptance of this law is realized we will continue to have unacceptable disposal practices in our seas.

- In the time until full implementation, there is much that we can do to improve the condition of our ocean and reduce the plastic pollution problem. As is stated in S 633, stringent enforcement within our territorial seas must be accomplished in order to protect our beaches.

- Additionally, we should encourage:

1. Recycling - discuss new legislation.

2. Biodegradable Plastics - six pack ring legislation.

3. Banning the sale of certain plastic hygienic devices where biodegradable alternatives exist - draft legislation.

4. Proper disposal facilities at docks and marinas.

All of these aspects can be and need to be implemented on a national and state level to help reduce the problem.

- Finally, I would like to give you a report on some activities related to the ocean that the Department has been involved in.

- Non-point source pollution. Two publications have been prepared by the Department, one entitled "The Clean Water Book" which is directed to the general public to educate them on other sources of pollution from non-point source contributions. The second publication entitled "New Jersey Stormwater Management Program" is directed to local officials to provide them with information on the Stormwater Management Act and various programs in the Department which administer the act.

- Memorandum of agreement regarding woodburning barges. The Department was asked by EPA to monitor this activity. Four burnings have taken place since the signing of this agreement and the Department has been provided surveillance of these burnings.

- Sludge disposal. Currently what is referred to as the New Jersey Consortium which represents six authorities utilize the 12 mile site and the 106 mile site. 100% sludge disposal at the 106 mile site is scheduled to be accomplished by the end of this current year.

- Green/Red Tide Study. Joint study by the EPA, NOAA and the Department, we are participating in this study.

- Natural Estuary Program. We have initiated meetings with New York State and EPA and the Commissioner has sent a letter of interest requesting that we have funding to conduct the study of the New Jersey/New York Harbor water resources.

- Ocean County. Regarding the recent incident during the week of May 26th thru the 31st, material was deposited on a 12 mile stretch of Ocean County beaches which contained a high concentration of floatable materials. This material included plastic hygienic devices and grease and oil particles which also contained some fecal material. The material appears to have been deposited by the meteorologic and current conditions that preceded the event for several days. One suspected source of the material is the 12 mile sludge disposal site. The event does not appear to be associated with any unpermitted activity. The Department is currently working with EPA, the six New Jersey sewage authorities that utilize the 12 mile site and the 106 Mile Transport Associates to eliminate as many floatables from the sludge disposal operation as possible and to increase the amount of sludge transported to the 106 mile site during the last six months of this year.

- Conclusion. As you can see a great deal of attention has been given to these various concerns by the Department to eliminate pollution of coastal and ocean waters. Much more needs to be done but we believe that we have a better understanding than we did before regarding the various sources. I will be happy to answer questions.

TESTIMONY OF
RICHARD L. CASPE
[redacted]TOR, WATER MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
ENVIRONMENT AND PUBLIC WORKS COMMITTEE

JULY 7, 1987

GOOD AFTERNOON SENATOR LAUTENBERG. I AM RICHARD L. CASPE, WATER MANAGEMENT DIVISION DIRECTOR OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION II. I AM HERE TO PRESENT TESTIMONY ON BEHALF OF REGIONAL ADMINISTRATOR CHRISTOPHER J. DAGGETT ON THE SUBJECT OF THE POLLUTION OF OUR COASTAL WATERS BY FLOATABLE MATERIALS. MR. DAGGETT SENDS HIS APOLOGIES FOR NOT BEING ABLE TO PRESENT THIS STATEMENT IN PERSON, HOWEVER I ASSURE YOU HE FEELS STRONGLY ABOUT THE PROTECTION OF OUR PRECIOUS MARINE RESOURCES.

IT IS CLEAR FROM THE INTEREST IN THIS HEARING AND PREVIOUS STATE LEGISLATIVE HEARINGS THAT CONCERN FOR THE PROTECTION OF OCEAN WATERS IS AT AN ALL TIME HIGH. OVER THE LAST SEVERAL MONTHS EPA AND OTHERS HAVE MADE CONCERTED EFFORTS TO GET A HANDLE ON WHAT IS TODAY ONE OF THE MOST VISIBLE SOURCES OF OCEAN POLLUTION: FLOATABLES. AS THE AMOUNT OF WASTE DISCARDED INTO THE NATION'S WATERWAYS HAS INCREASED OVER THE LAST 40 YEARS SO HAS THE AMOUNT OF PLASTICS IN THAT WASTE STREAM INCREASED.

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[illegible]ASED AWARENESS OF THE FLOATABLES PROBLEM IS REFLECTED IN THE [illegible]TIES OF REGULATORY AGENCIES AT ALL LEVELS. AT EPA REGION II FOR EXAMPLE, RECENT INITIATIVES UNDER WAY INCLUDE:

- A REVIEW WITH THE SLUDGE DUMPERS OF THEIR OPERATING PROCEDURES FOR SLUDGE HANDLING TO MAKE SURE FLOATABLE MATERIALS ARE REMOVED;
- AN INVESTIGATION OF THE DISPOSAL OF WASTES FROM SHIPS AT SEA;
- IMPOSITION OF STRICTER CONDITIONS ON AT-SEA WOOD BURNING OPERATIONS;
- INSURING COMPLIANCE BY THE SLUDGE DUMPERS WITH THE SCHEDULES FOR THE PHASING OUT OF SLUDGE DUMPING AT THE 12-MILE SITE; AND,
- INCREASED MONITORING OF OCEAN DUMPING ACTIVITIES.

ALL OF THESE DEVELOPMENTS TAKEN TOGETHER SHOW THAT A CONCERTED ATTACK ON THE PROBLEMS YOU ARE DISCUSSING TODAY IS UNDERWAY IN REGION II. ONE OF THE MAIN PROBLEMS WE SEE WITH REGULATING FLOATABLES IS IDENTIFYING AND CONTROLLING THE NUMEROUS POTENTIAL SOURCES OF THESE MATERIALS. THEY INCLUDE: DISCHARGE OF UNTREATED WASTEWATER FROM INADEQUATE TREATMENT PLANTS AND COMBINED SEWER OVERFLOWS; DISCHARGE FROM NON-POINT SOURCES SUCH AS STORM SEWERS AND STREET RUNOFF; SOLID WASTE DISPOSAL ACTIVITIES; COMMERCIAL VESSELS AND RECREATIONAL BOATS; AND THE OCEAN DUMPING OF MUNICIPAL SLUDGE. OF COURSE IF FLOATABLES WERE FOUND IN MUNICIPAL SLUDGE WHICH IS OCEAN DUMPED, THIS WOULD VIOLATE THE TERMS OF THE OCEAN DUMPING PERMITS.

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OCEAN SLUDGE DUMPING

THERE HAS BEEN CONCERN EXPRESSED BY SOME PEOPLE THAT THE DISPOSAL OF MUNICIPAL SLUDGE AT THE 12-MILE SITE IS BE ONE POSSIBLE SOURCE OF THE FLOATABLES. TO ADDRESS THIS, EPA HAS INVOLVED THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) THE SIX NEW JERSEY SEWERAGE AUTHORITIES THAT OCEAN DUMP SLUDGE, ALONG WITH NEW YORK CITY AND THE SLUDGE HAULERS, AND TAKEN THE FOLLOWING ACTIONS:

° THE NEW JERSEY SLUDGE HAULERS HAVE AGREED TO INCREASE FROM 16% TO 43% THE PROPORTION OF THE NEW JERSEY SLUDGE THAT IS DISPOSED OF AT THE 106-MILE SITE INSTEAD OF AT THE 12-MILE SITE. THIS WILL ENSURE THE NEW JERSEY SEWERAGE AUTHORITIES COMPLIANCE WITH THE COURT-ORDERED SCHEDULE TO COMPLETELY PHASE-OUT SLUDGE DUMPING AT THE 12-MILE SITE BY DECEMBER 31, 1987. IN ADDITION, UNDER THE SAME COURT-ORDERED SCHEDULE, AS OF JUNE 8, 1987, NEW YORK CITY INCREASED FROM 10% TO 40% THE PROPORTION OF ITS SLUDGE BEING DISPOSED OF AT THE 106-MILE SITE. BOTH WESTCHESTER AND NASSAU COUNTIES IN NEW YORK HAD ALREADY STARTED DUMPING 100% OF THEIR SLUDGE AT THE 106-MILE SITE AS OF MARCH AND JUNE, 1986, RESPECTIVELY.

° EPA HAS DESIGNED AND INITIATED A SAMPLING STRATEGY IN ORDER TO OBTAIN ADDITIONAL INFORMATION ON THE POSSIBLE PRESENCE OF FLOATABLE MATERIALS IN THE MUNICIPAL SLUDGE WHICH IS OCEAN DISPOSED. THIS STRATEGY INCLUDES SAMPLING THE SLUDGE DIRECTLY FROM THE SLUDGE

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VESSEL[redacted]G AT DOCK-SIDE AND PRIOR TO THEIR DEPARTURE FOR [redacted]NG SITES. SAMPLING IS DONE WITH A SCALLOP DREDGE WHICH COLLECTS SLUDGE THAT IS VISIBLY INSPECTED FOR FLOATABLES. IN ADDITION, EPA HAS ALREADY TRACKED SEVERAL SLUDGE VESSELS TO THE 12-MILE SITE, VISIBLY INSPECTED THE SITE AFTER DISPOSAL OPERATIONS WERE COMPLETED, AND TOWED A NET THROUGH THE DUMP SITE. BASED ON OUR OBSERVATIONS AND SAMPLING EFFORTS, WE HAVE NO EVIDENCE TO SUPPORT CLAIMS THAT MUNICIPAL SLUDGE DUMPING IS CONTRIBUTING TO THE FLOATABLES PROBLEM. WHILE THE RESULTS OF THESE EFFORTS HAVE BEEN NEGATIVE SO FAR, WE ARE CONTINUING THE INVESTIGATION. THE INFORMATION WE COLLECT WILL HELP IDENTIFY THE PRESENCE, TYPES, AND QUANTITIES OF ANY FLOATABLES IN THE SLUDGE. IN ADDITION, THIS INFORMATION WILL BE USED TO VERIFY COMPLIANCE WITH THE OCEAN DUMPING PERMITS.

° EPA HAS INSTRUCTED ALL OF THE NINE NEW YORK AND NEW JERSEY SLUDGE DUMPERS TO REVIEW THEIR OPERATING PROCEDURES FOR THE HANDLING OF FLOATABLES AND IMPLEMENT ALTERNATE DISPOSAL METHODS FOR THE SKIMMINGS OF DEBRIS AND SCUM RESULTING FROM THE SEWAGE TREATMENT PROCESS. UNDER THE TERMS OF THE OCEAN DUMPING PERMITS, FLOATABLES AND OTHER NON-BIODEGRADABLE MATERIALS ARE PROHIBITED FROM BEING OCEAN DUMPED WITH THE SLUDGE. IN RESPONSE TO OUR REQUEST, ALL OF THE NINE SLUDGE DUMPERS INDICATED TO US THAT MOST IF NOT ALL OF THE FLOATABLE MATERIALS ARE TRAPPED IN THE SEWAGE TREATMENT PLANTS AND ARE SENT TO A LANDFILL FOR DISPOSAL. HOWEVER, THE PERMITTEES ALSO INDICATED THAT THERE ARE NO STANDARD

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OPERATING PROCEDURES FOR THE REMOVAL OF FLOATABLES. SEVERAL OF THEM ARE ACTIVELY INVESTIGATING THE INSTALLATION AND USE OF SPECIALIZED EQUIPMENT, SUCH AS STRAINERS, TO FURTHER ADDRESS THE ISSUE.

FLOATING WOOD

IN ORDER TO MINIMIZE THE OCCURRENCE OF WOOD FALLING OFF LOADED BARGES DURING TRANSIT TO THE WOOD BURNING SITE, LOCATED SEVENTEEN NAUTICAL MILES OFF OF POINT PLEASANT, ALL NEWLY ISSUED AND PROPOSED PERMITS REQUIRE STANCHIONS ON THE BARGES TO BE A MINIMUM OF 6 FEET TALL WITH A MAXIMUM SPACING OF 15 FEET CENTER-TO-CENTER ON BOTH SIDES OF THE BARGE.

PREVIOUS PERMITS REQUIRED THAT ALL BURN BARGES BE EQUIPPED WITH STANCHIONS TO PREVENT MATERIAL FROM FALLING OVERBOARD, BUT A MINIMUM HEIGHT OR MAXIMUM SPACING WAS NOT SPECIFIED. ALSO, FLOATING BOOMS MUST NOW BE INSTALLED IN ORDER TO CONTAIN ANY MATERIALS WHICH MAY FALL INTO THE WATERWAYS DURING LOADING OPERATIONS. EPA HAS PLACED VOLUME LIMITATIONS ON THE AMOUNT OF MATERIALS WHICH MAY BE BURNED AT ANY ONE TIME. IN ADDITION, WE ARE REQUIRING A TRAILING VESSEL TO PERFORM TWENTY-FOUR (24) HOUR PER DAY SURVEILLANCE WHICH WOULD BE RESPONSIBLE FOR RETRIEVING ANY WOOD WHICH MAY FALL INTO THE WATERWAYS OR OCEAN.

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NEW INITIATIVES

° [redacted] MEETING WITH REPRESENTATIVES FROM THE NEW YORK/ NEW JERSEY PORT AUTHORITY TO DISCUSS ALTERNATE METHODS FOR THE DISPOSAL OF SHIP-GENERATED WASTES, SUCH AS DOCK-SIDE FACILITIES TO RECEIVE THE SHIPS' WASTES.

° EPA IS PROVIDING CONTRACT SUPPORT TO THE NJDEP FOR A STUDY OF FLOATABLES ON NEW JERSEY BEACHES. THE STUDY HAS FOUR PARTS:

1) TO DETERMINE THE DISTRIBUTION OF FLOATABLES ON SELECTED BEACHES BY CATEGORIZING AND QUANTIFYING THE TYPES AND NUMBERS OF FOREIGN OBJECTS ON EACH BEACH.
2) TO IDENTIFY POSSIBLE SOURCES OF THESE OBJECTS (e.g. BEACH USERS, BOATING AND SHIPPING, SEWAGE TREATMENT PLANTS, LANDFILLS, OCEAN DUMPING).
3) TO IDENTIFY SPECIFIC SOURCES OF MATERIALS FOR EACH BEACH AS ACCURATELY AS POSSIBLE THROUGH KNOWLEDGE OF CIRCULATION PATTERNS AND CURRENTS IN THE NEW YORK BIGHT.
4) TO TEST FOR SPECIFIC SOURCES OF FLOATABLES BY RELEASING IDENTIFIABLE "TAGS", "DRIFTERS", OR OTHER MEANS TO FOLLOW WATER MOVEMENT FROM HE POSSIBLE SOURCE TO TARGET BEACHES.

STATUS OF MARPOL

WITH REGARD TO SHIP-GENERATED WASTE, EPA REGION II WROTE TO APPROXIMATELY ONE HUNDRED COMMERCIAL SHIPPING COMPANIES THAT TRAVEL IN WATERS ADJACENT TO NEW YORK HARBOR TO REQUEST A DESCRIPTION OF METHODS USED TO DISPOSE OF SHIP-GENERATED WASTES

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AT-SEA. [illegible] COMMERCIAL SHIPPING COMPANIES INCLUDED CRUISE LINES, BULK CAR[illegible] AND FREIGHTERS. THE RESPONSES RECEIVED SO FAR INDICATE THAT THE MAJORITY OF THE SHIPS DISPOSE OF THEIR WASTES AT SEA, PRIMARILY BECAUSE THE PORTS THEY USE LACK ADEQUATE DISPOSAL FACILITIES. THOSE SHIPS THAT DO NOT OCEAN DISPOSE THEIR WASTES EMPLOY SHIP-BOARD INCINERATORS TO DISPOSE OF KITCHEN WASTES, PLASTICS, AND OIL-CONTAMINATED SUBSTANCES.

IN ADDITION TO DOMESTIC LEGISLATION, OCEAN DISPOSAL ACTIVITIES ARE ALSO GOVERNED BY VARIOUS INTERNATIONAL TREATIES. HOWEVER, THE TREATIES IN EFFECT DO NOT ADDRESS THE OCEAN DISPOSAL OF SHIP-GENERATED WASTE. A MAJOR INTERNATIONAL TREATY THAT COULD ADDRESS THE OCEAN DISPOSAL OF SHIP-GENERATED WASTES IS ANNEX V OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL). ANNEX V REGULATES THE DISPOSAL OF GARBAGE FROM SHIPS AND IS ONE OF FIVE ANNEXES UNDER MARPOL WHICH REGULATE SHIP-GENERATED POLLUTION. HOWEVER, ANNEX V HAS NOT BEEN RATIFIED BY A SUFFICIENT NUMBER OF COUNTRIES REPRESENTING THE REQUIRED GROSS TONNAGE (OF CARGO CARRIED) TO BRING IT INTO FORCE INTERNATIONALLY. AT LEAST 15 COUNTRIES REPRESENTING 50% OF THE WORLD'S MERCHANT SHIPPING TONNAGE ARE NEEDED TO RATIFY ANNEX V. TO DATE, ANNEX V HAS BEEN RATIFIED BY 27 COUNTRIES REPRESENTING 42% OF THE WORLD'S SHIPPING TONNAGE. THE U.S. HAS NOT RATIFIED ANNEX V AS OF YET. THE U.S. REPRESENTS 4.7% OF THE SHIPPING TONNAGE. THE DOCUMENTS NECESSARY FOR THE

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ERE SIGNED BY THE PRESIDENT ON OR ABOUT FEBRUARY 1987 AND HAVE BEEN TRANSMITTED TO THE SENATE FOR ITS ADVICE CONSENT.

YOU HAD ASKED FOR SOME POSSIBLE NEW APPROACHES TO ADDRESSING ATABLES. ACTIONS THAT COULD BE TAKEN INCLUDE:

- RATIFYING ANNEX V OF MARPOL;
- INSTITUTING A PUBLIC AWARENESS CAMPAIGN TO SHIFT CONSUMER TRENDS AWAY FROM PLASTICS TOWARD BIODEGRADABLE ALTERNATIVES; AND,
- CONDUCTING A STUDY OF THE SOURCES AND EXTENT OF THE FLOATABLES PROBLEM.

IF WE ARE TO MAKE PROGRESS IN ABATING THIS GROWING PROBLEM, L LEVELS OF GOVERNMENT AND THE PUBLIC MUST WORK IN CONCERT, KING A COMPREHENSIVE AND INTEGRATED APPROACH. HERE IN REGION II, BELIEVE WE HAVE MADE A GOOD START AND WE HOPE TO CONTINUE BY CREASING AWARENESS OF THE PROBLEM, INITIATING A DIALOGUE ON OSSIBLE SOLUTIONS, AND, WHERE FEASIBLE, IMPLEMENTING ABATEMENT MEASURES.

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CONTROLLING AND REDUCING POLLUTION FROM PLASTIC WASTE

THURSDAY, SEPTEMBER 17, 1987

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Environmental Protection,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:30 a.m., in Room SD-406, Dirksen Senate Office Building, Hon. George Mitchell (chairman of the subcommittee), presiding.

Present: Senators Mitchell, Chafee, Durenberger, and Pressler.

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator **Mitchell**. Good morning, ladies and gentlemen. The subcommittee convenes today to conduct a hearing on legislation to reduce the pollution of our waters and coastal areas by plastic debris.

This morning's hearing builds upon two field hearings conducted before the subcommittee in Rhode Island and New Jersey by the subcommittee's ranking minority member and past chairman, Senator Chafee, and by Senator Lautenberg, who chairs the Subcommittee on Superfund and Environmental Oversight.

Our purpose is to continue consideration of the legislation that Senators Lautenberg and Chafee have each introduced to alleviate the problems caused by plastic pollution.

A walk along the Maine coast reveals just how pervasive plastic products have become in our environment. In one 30-mile stretch of the State's magnificent shoreline, volunteers collected more than 1,500 pounds of debris. A third of the litter removed was composed of plastic materials which would otherwise have become an enduring eyesore.

Aside from marring the beauty of one of Maine's greatest natural assets, the plastic bags and bottles and other debris that wash ashore also are a threat to the State's tourism industry. Tourism is one of Maine's most important industries, and its continued contribution to the State's economy depends on healthy and attractive natural areas.

Most of the plastic waste and other garbage that fouls the coast of Maine and other States comes from ocean, rather than land, sources. Dumping of garbage at sea is still a standard operating procedure for the majority of commercial and military vessels. Worldwide, this everyday, sea-going practice introduces to the marine environment an estimated 6.4 million metric tons of plastic debris each year.

The aesthetic and concomitant economic problems caused by plastic litter accumulating on our coast are easily seen and comprehended. Less well understood, however, are impacts to fish and wildlife that may result from the persistence of plastic products in the environment.

Individual birds, seals, fish, or sea turtles are known to be injured or killed by ingesting or becoming entangled in various plastic items. These are unfortunate occurrences, which probably all of us have seen, at least in photographs.

More troubling, though is that each individual victim suggests the possibility of larger, more serious consequences for populations of marine species, particularly those such as the Kemp's ridley sea turtle, which are already at dangerously low levels.

Our first panel of witnesses this morning will help us look more closely at the scope of the problem caused by plastic debris in the environment, including the effort these long-lasting materials may have on populations of fish and wildlife species.

Certainly, an important first step in stemming the damage caused by plastic debris will be for the U.S. to ratify and implement Annex V to the International Convention for the Prevention of Pollution from Ships. This global agreement will bring a long overdue end to the routine, institutionalized dumping of plastic garbage into the world's oceans.

The primary focus of today's second panel of witnesses, then, will be a discussion of various legislative proposals to implement and enforce the provisions of Annex V. But we also will expand our view of the issue beyond shipboard sources of debris in marine waters and explore broader mechanisms to reduce pollution from plastic waste material more generally.

Therefore, the third and final witness panel will focus on methods other than prohibitions on disposal for reducing plastic debris in the environment, including: using degradable plastics in certain products; encouraging recycling; using alternative materials for current plastic products; using labels to encourage proper disposal; and increasing public awareness of the problem and its solutions.

I want to thank our many witnesses for being here this morning and I look forward to their testimony.

Before we start with our first panel, I want to recognize one of the two Senators who have taken the lead in this area, the former chairman of this subcommittee and man who has done more than any other single person to protect the American environment in this decade, Senator Chafee.

Before asking Senator Chafee to speak, I want to note that Senator Lautenberg, who is also very active and interested in this area, is unable to be present because of the death of his mother, but he will continue his efforts in this area, and I am sure will carefully review the testimony of the witnesses.

He has a statement which will be included at this point in the record.

[The statement referred to follows:]

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Mr. Chairman, I'd like to commend you for your interest in the plastic pollution issue. As you know, today marks the third hearing the Subcommittee has held on the issue.

Earlier this year I introduced the Plastic Pollution Control Act of 1987—S. 633. This bill responds to the pervasive threat to our coastal communities. A threat to our beaches and oceans. Our colleague, Senator Chafee has introduced similar legislation.

My State has seen the ravages of plastic pollution first hand. This past Summer was marked by numerous beach closings. Miles of our coast were scarred with tampon applicators, condoms, and other floatables.

Over the years New Jersey has seen the hospital wastes, such as used syringes, on our beaches. We've seen the six pack rings. We've seen the plastic containers.

We've seen it, and we know what it means to the economy and the environment. Our toursim industry depends on clean beaches. About $7 billion a year flows into New Jersey from coastal tourism activities.

We want to be bringing revenues in, not spending dollars to clean up the refuse that should not be on our beaches. But our current laws just can't solve this problem.

A problem for tourism. For swimmers and recreational boaters. For our fishermen. And for our marine and wildlife which choke or strangle on plastics.

Where does it come from? In my state one source is the Fresh Kills landfill on Staten Island. Garbage, including disposed plastic products, such as hospital wastes, is carried out to this landfill on barges. The garbage has been allowed to fall into the water from the barges, and from the landfill itself. This refuse then washes up on New Jersey's beaches, and pollutes our waters.

There are other possible sources of plastics pollution. According to the Center for Environmental Education, the world's merchant shipping fleet junks 450,000 plastic containers every day.

Merchant ships dump into the oceans more than 12.4 billion pounds of cargo wastes annually, including plastic sheeting and strapping bands.

Recreational and sport fishing vehicles junk more than 100 thousand pounds of plastic bottles, bags, and other garbage into U.S. coastal waters each year.

The evidence continues to grow about marine animals entangled in plastic debris and marine animals that have swallowed and choked on plastic junk.

Birds, and even the great whales have become victims of plastics carelessly discarded into the ocean. Virtually every marine species is susceptible to the dangers of plastic debris.

Despite such evidence plastics continue to be dumped. In the Northern Pacific Ocean as many as 250,000 birds are believed to die every year in nets laid by Japanese salmon fishermen. At least 30,000 northern fur seals reportedly die each year from plastic entanglement.

That's the problem. But what's the solution? We have laws on the books—the Refuse Act of 1899, the Clean Water Act, and the Ocean Dumping Act. But they weren't designed and they aren't enforced to address this kind of plastic pollution.

We have an international law that has not yet entered into force. It's Annex V to the International Convention for the Prevention of Pollution from Ships. U.S. ratification will pave the way for the agreement's entering into force.

I have been working for Senate ratification. In June, I contacted Senator Pell, the Chairman of the Foreign Relations Committee, urging quick action on Annex V. He responded by holding a hearing in July. I along with Senator Chafee testified before the Foreign Relations Committee in support of ratification.

I am hopeful that the Foreign Relations Committee soon will report the Annex for consideration by the Senate. But even after ratification we will need a strong domestic implementing law to put the agreement into effect in the country.

S. 633 would provide the framework for such domestic implementing legislation. S. 633 would ban the disposal of plastic products—all the way out to the 200 mile limit.

It would not allow plastic disposal on beaches and landfills, where the junk could be washed or blown into the water. This means the bill would explicitly cover the Fresh Kills problem.

Violators of this new law would be hit by stiff criminal and civil penalties. The bill allows citizens to sue to enforce the new law.

We'd also have EPA study ways to eliminate plastic pollution. Can we use alternative products? Would labeling help? How about degradable plastic?

The bill also mandates a comprehensive public awareness program about plastic pollution.

With ratification of Annex V and domestic plastic pollution control legislation we can take an important step towards cleaning up our beaches, our waterways, and protecting our treasured wildlife and marine species. We can take a major step to protect and preserve the economy of New Jersey's coastal communities.

Today's hearing is an important step in this process. I thank all the witnesses for their participation today, and again I commend you, Mr. Chairman, for your efforts in this area.

Senator MITCHELL. Senator Chafee.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Thank you very much, Senator Mitchell.

I want to express my profound thanks to you as chairman of this subcommittee for all you have done in pursuing such an aggressive course in connection with addressing so many of the major sources of pollution which afflict our society. I think that we all owe a deep debt of gratitude to you for pursuing it so vigorously, particularly with the long demands that have been falling upon your time since the beginning of this year.

I introduced legislation last year designed to address the problem of plastic debris in the marine environment, and this year have reintroduced that measure plus additional legislation to implement the provisions of Annex V of the International Convention for the Prevention of Pollution From Ships, known as MARPOL.

Mr. Chairman, I am not going to read the balance of the statement because we have a heavy list of witnesses and we all look forward to hearing from them.

I do want to also acknowledge, as you did, the work of our distinguished colleague from New Jersey, Senator Lautenberg, who has introduced legislation similar to that which I am supporting. So we are hopeful that from today's hearing we can get some leads on how to tackle this very, very difficult problem.

I would add one thing. Although this hearing is devoted primarily to the control and the disposal of plastic waste in our oceans, and that is the principal matter we are addressing, we had hearings under your leadership, Mr. Chairman, dealing with the disposal of solid waste and the terrific problems that every community is encountering now on that issue and is going to encounter in the future.

So while we are focusing particularly on the oceans today, we have this difficulty of plastics in our regular solid waste disposal dumps, and something has to be achieved to attain faster deterioration of these plastic bottles, jugs, and all kinds of plastic materials. I don't think that you can buy anything these days that doesn't have some form of plastic wrapper on it. That is a matter, I think, that we have to bear in mind as we proceed with the ocean section of this.

Thank you, Mr. Chairman.

[Senator Chafee's statement follows:]

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

At the outset let me extend my thanks to Senator Mitchell, the distinguished chairman of the Environmental Protection Subcommittee, for scheduling this hearing on the growing problem of plastic pollution. Senator Mitchell has steered this subcommittee on an aggressive course, addressing many of the major sources of pollution which afflict our society.

Last year I introduced legislation designed to address the problem of plastic debris in the marine environment. This year I reintroduced this measure, plus additional legislation to implement the provisions of Annex V of the International Convention for the Prevention of Pollution from Ships (known as MARPOL). My distinguished colleague from New Jersey, Senator Lautenberg, has introduced similar legislation, underscoring the need not just in Rhode Island and New Jersey, but in all ocean States, to prevent plastic debris from littering our beaches and killing marine creatures. My bills, S. 559 and S. 560, and legislation introduced by Senator Lautenberg, S. 633, are the subjects of today's hearing.

S. 559 would require the Environmental Protection Agency to recommend to Congress methods available to eliminate or lessen the adverse effects of plastic waste. Specifically, EPA will be required to look at the feasibility of using degradable plastics in fishnets, packing bands and other plastic products that pose a threat to the marine environment. Because these items frequently make their way into the oceans, either by accident or in many cases from intentional dumping, it may make sense to require that these products be made from degradable materials. I expect to hear informed testimony on this topic from Dr. Anthony Andrady, who has written a report on this subject for the National Fisheries Service.

Also, I am looking forward to testimony from Dana Kester, acting dean of the University of Rhode Island Graduate School of Oceanography, regarding the effects of plastic on the marine ecosystem.

EPA will also evaluate the use of incentives to reduce improper plastics disposal, such as recycling, bounties and rewards. I hope that some of the testimony today will address the need for finding workable technologies for recycling. It is my understanding that the percentage of plastic as a component of solid waste has nearly doubled in the past decade, and is approaching 10 percent. This figure takes on added significance when you consider that nearly half of the municipal landfills in the Nation are fast approaching capacity.

In my own State of Rhode Island there is a great deal of support for recycling. This is evidenced by the fact that Rhode Island was the first State to pass a mandatory recycling law. By October of this year, two communities in Rhode Island will be required to package glass, aluminum, and plastic soda bottles and milk jugs separately from other trash. In the near future, all Rhode Island residences will receive a 20-gallon trash container, compliments of the State, for recyclable materials.

The passage of recycling legislation in Rhode Island, and similar legislation in New Jersey, sends an important message: State and local officials, faced with soaring land disposal costs and limited landfill capacity, are insisting, for economic reasons, that trash be recycled.

Now I am aware of the difficulties in recycling plastics. Unlike aluminum or glass, plastics can be made from numerous different resins, each with a different melting point and displaying different characteristics. However, I am confident that with the research capabilities of the plastics industry, we will be able to solve the technical difficulties of recycling plastic. The economics of waste disposal demand that we do so.

The legislation also requires that plastic six-pack holders be made from degradable materials. Eleven States, including Rhode Island and New Jersey, have already enacted similar legislation.

The legislation we are considering today also addresses another major source of plastic pollution: Plastic garbage intentionally dumped from ocean-going vessels. I recently amended S. 560 with a bill drafted by the Coast Guard that creates domestic legislation to implement the provisions of Annex V of MARPOL. The Foreign Relations Committee is expected to recommend ratification of this treaty to the full Senate, and I expect it to become international law in the near future. The approach taken in this legislation, which would amend the act to prevent pollution from ships (APPS), would make it illegal for ships operating in American waters to intentionally dump plastic garbage.

I look forward to hearing testimony from Admiral Kime of the Coast Guard, Assistant Secretary Pyatt of the Navy and others as to how to best implement the provisions of Annex V.

One final point: a necessary complement to all of the solutions we discuss today is public education. Recycling as a strategy will not work unless the public is made aware of the economic and social benefits it provides. Boaters and beachgoers will continue to litter unless they can be convinced that improperly disposed of plastic harms the environment. Both Senator Lautenberg's bill and my bill emphasize the need for public education.

I trust that today's hearing will shed light on each of these topics, and inform us of the best methods for addressing the problem of plastic waste.

Senator MITCHELL. Thank you, Senator Chafee.

The first panel includes Dr. Dana Kester, Graduate School of Oceanography, University of Rhode Island; Mr. James E. Douglas, Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration; and Mr. Roger McManus, President of the Center for Environmental Education here in Washington, D.C.

Gentlemen, good morning and welcome. We will begin in the order listed on the agenda. I will state, for your benefit and that of the subsequent witnesses, who I assume and hope are present in the audience, that under the committee's rules, each witness' written statement will be printed in full in the hearing record.

We ask you to summarize your statement in your oral presentation today and to limit your remarks to 5 minutes, then there will follow a series of question and answer periods to the extent desired by the members of the committee.

To help you in that effort, you see a box here with three lights on it, when the green light is on, it means that you are doing fine; when the orange light comes on, it means that you had better think about stopping; and when the red light comes on, it means stop.

We will begin with Dr. Kester. Welcome, Doctor. We look forward to hearing from you.

Senator CHAFEE. Mr. Chairman, I also wanted to join you in the welcoming of Dr. Kester, who is from the School of Oceanography at URI. We are delighted to have you here, Doctor.

STATEMENT OF DR. DANA KESTER, GRADUATE SCHOOL OF OCEANOGRAPHY, UNIVERSITY OF RHODE ISLAND

Dr. KESTER. Thank you, Mr. Chairman, and Senator Chafee.

I appreciate this opportunity to express my views on the problems associated with plastics in the marine environment. The types of plastics found in the ocean include raw plastic particles, which are used for manufacturing a wide variety of materials; pieces and fragments of plastic sheet, foamed material, and molded items, and pieces of thread, filament and netting.

The wide range of materials and their broad distribution in the ocean suggests that a significant problem exists, requiring attention.

Plastics found in the ocean come from a variety of sources. Some material results from the careless disposal of plastic items along the shoreline. Garbage dumped from ships contains a substantial amount of plastics. Synthetic monofilament line and fishing nets are lost or discarded at sea. Plastic litter enters the ocean from coastal discharges and runoff. It is believed that plastic particles are released or lost from manufacturing facilities in coastal regions or during transportation.

There is increasing use of plastics for containers, packaging, synthetic line and fishing nets, as well as a host of disposable products.

The problem of plastics in the ocean is due to their persistence and accumulation in surface waters and along the coastline. One of the major principles that has emerged from chemical studies in the ocean is that the marine ecosystem is sustained by geochemical cycles. Chemical constituents enter the oceans and are cycled and recycled through the water column and to the sea-floor. Most plastics do not participate in these cycles. They enter the ocean and accumulate.

Contamination of the ocean by plastic is not a localized problem, it is a global phenomenon. Observations of plastic items have been found throughout the world and in seemingly remote regions. The global distribution of plastics in the marine environment is a warning sign that there could be important effects in the ecosystem.

The types of marine life that have been affected by plastics include marine mammals, seabirds, turtles, fish and crustaceans. The effects are mainly mechanical rather than toxicological. Animals become entangled in plastic line and nets, ingestion of plastic debris reduces their ability to assimilate food.

There are increasing indications that plastic artifacts in the ocean are not only harmful to individual organisms, but they may also be affecting populations of some species.

We need greater control over the disposal of plastic material to prevent its entry into the marine environment. For products that are designed to be disposable, steps should be taken to utilize degradable materials rather than persistent plastics.

The ideal plastic for disposable use would be a material that is initially broken down by a process such as hydrolysis or photochemical reaction into substances that can then be oxidized completely by naturally occurring micro-organisms.

The problem of fishing gear loss or discarded in the ocean is difficult to address. There are many benefits to synthetic fishing gear such as reduced weight and greater durability when compared to natural products. Making fishing gear from plastics that are designed to self-destruct would not be useful.

The release of fishing gear in the marine environment should be minimized by publicizing the harmful effects of net debris and, if necessary, by registering nets with a traceable identification and establishing penalties against improper disposal.

Concerning the pending legislation, I would recommend that the United States implement Annex V of the 1978 Protocol to the International Convention for the Prevention of Pollution from Ships.

Because of the widespread occurrence of plastics in the marine environment, I would recommend that the provisions in the legislation concerning activities within specific distances from the nearest land be applied to the U.S. Exclusive Economic Zone. Our knowledge of transport processes in the marine environment and the results of this material on biological organisms does not support the notion that impacts are limited to certain distances from land.

The hearing and the pending legislation addresses one aspect of plastic pollution in the marine environment, specifically that which results from marine sources. Additional factors need to be considered to eliminate the detrimental effects of plastics in the environment. We must seek the reduction of plastic discharges to the environment from all sources.

The widespread occurrence of plastics in the marine environment is further evidence of the finite limits of the global ecosystem and the ability of human activity to overwhelm those limits.

Thank you.

Senator MITCHELL. Thank you very much, Dr. Kester. You have set a commendable standard of brevity that the other witnesses will be hard pressed to meet.

Mr. Douglas, welcome. We look forward to hearing from you.

Senator CHAFEE. The chairman has such a threatening tone. Mr. Douglas, do not exceed the limit.

STATEMENT OF JAMES E. DOUGLAS, JR., ACTING DEPUTY ASSISTANT ADMINISTRATOR FOR FISHERIES, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE, ACCOMPANIED BY JAMES COE, PROGRAM MANAGER, MARINE ENTANGLEMENT RESEARCH PROGRAM, NOAA

Mr. DOUGLAS. Senator Chafee and I were talking about insurance, and if I could carry over some of my brevity from there, Senator, yesterday.

Senator CHAFEE. Yesterday, yes, but you are not permitted to carry that time over from yesterday to today.

Mr. DOUGLAS. Mr. Chairman, let me introduce to you Mr. Jim Coe, on my right, who is the Program Manager for NOAA's Marine Entanglement Research Program out in Seattle. He is here in case we get into details; he can better answer the committee.

Let me first begin by stating the Department of Commerce's position on the three bills.

We are opposed to enactment of S. 559 and S. 633, and our reasons are more specifically set forth in the written testimony. Basically, both of these bills would require additional studies, much of which we think has already been done.

We also would point out that a comprehensive effort is now underway, at the urging of 30 Members of the Senate, by the way, that will assess the marine debris problem and the need for research, identify potential reduction measures, and consider alternative actions to address the problem of plastic pollution in the marine environment.

S. 633 also includes a title to implement Annex V to MARPOL, and we respectfully submit that the Administration's proposal, as it will be presented by the Coast Guard, is a superior solution as to how to implement that Annex. We will defer to them on all matters of implementation and enforcement. Accordingly, we agree with S. 560, as amended, since it reflects the Administration's proposal for implementation of Annex V.

Now let me go on and briefly summarize some of NOAA's findings and efforts regarding plastics and marine debris in general. They are more specifically set out in the written testimony.

We are in our third year of studying marine debris and our focus comes from the findings of the International Workshop on Fate and Impact of Marine Debris, which was held some three years ago. That focus has been on the sources of plastics, the effects on wildlife, public education, and means for reducing the introduction of plastics to the marine environment.

Our findings show that the most prevalent debris on the ocean surface the world over is the particulate remains of manufactured plastic items. This material, plus lost fishing gear and other plastic debris, obviously causes problems for a variety of wildlife. Ingestion and entanglement are major problems to marine mammals, turtles, seabirds, and fish. Even if not killed directly by such material, the animal may be wounded, lose its ability to evade predators, and lose its ability to catch food.

Although we know that all these things can and do happen to marine mammals, we do not know the extent of these occurrences. Quantification of this problem is very difficult, costly, and would take considerable time in order to assure statistical validity. Consequently, we are unable to tell you the impact of this pollutant on the health of the affected stocks.

The cornerstone of NOAA's efforts has been a public awareness program that initially concentrated on industrial sources of debris in the north Pacific Ocean. This educational effort has since been expanded to the East Coast and to the Gulf of Mexico, and has even been international in scope with presentations in Japan, the Republic of Korea, and Taiwan.

To aid in our present studies and give better focus to any future studies, NOAA formed a voluntary, informal national discussion group called the Marine Debris Roundtable. That group includes representatives from government, the fishing industry, port authorities, merchant shipping, the waste management industry, and the plastics industry.

Our meetings with this group have shown us that there is much work to be done, but there is a cooperative and positive attitude by all the parties, and we believe that we can find acceptable solutions in the future.

In addition, I would point out to the subcommittee that NOAA is chairing an interagency task group under the auspices of the Domestic Policy Council's Working Group on Energy, Natural Resources and the Environment. Participants include NOAA, the Department of Agriculture, Council on Environmental Quality, the Office of Management and Budget, the Coast Guard, the Navy, the Office of Domestic Policy, the Department of State, the Environmental Protection Agency, and the Department of the Interior.

Mr. Chairman, I believe that this task group will serve as a coordinating and review group to develop a very comprehensive report on where we stand on marine debris and the plastic pollution problem, and where we might be going. We expect that group to have that report within six to nine months.

Mr. Chairman, that is a brief synopsis of what you will find in my more complete testimony. Mr. Coe and I are more than willing to try to answer any questions that you have. If we can't answer them here, we will go back and get the answer for you.

Senator **Mitchell**. Thank you very much, Mr. Douglas.

Mr. McManus, welcome.

STATEMENT OF ROGER McMANUS, PRESIDENT, CENTER FOR ENVIRONMENTAL EDUCATION

Mr. McMANUS. Good morning, Mr. Chairman and Senator Chafee.

I am Roger McManus, President of the Center for Environmental Education. CEE has conducted considerable research on the issue of marine debris. Some of our findings are summarized in reports that I have made available to you.

For years, marine debris did not appear to be a problem. Fish ate the food garbage, and metal and glass sank, and wood, paper and cloth rotted and decayed. But now more manufactured objects are made of plastic, a material renowned for its light weight, strength and durability.

The very characteristics that make plastic so useful make it a permanent, ubiquitous and now the most prevalent kind of manmade marine debris.

Plastic objects are discarded or lost from private and public vessels, tossed away by recreational boaters and beachgoers, and flushed out of sewers and waste water treatment systems that are not designed to handle this floatable component of municipal waste.

Together, these sources, dump, lose, or flush billions of pounds of plastic waste into the ocean every year. The accumulation of this debris is problematic for not only the obvious aesthetic reasons, but for economic reasons and wildlife conservation as well.

Plastic debris is costly for the coastal communities that depend on tourism, because tourists won't return to a messy beach. At sea, nets, monofilament lines and plastic bags are proven threats to vessels and divers.

Persistent debris waste fishery resources. The U.S. commercial fishing industry is losing millions of dollars each year to the effects of plastic debris. Time wasted removing plastic trash from gear and catch, vessel disablement and damage, and ghost fishing.

Once lost or discarded, derelict traps continue indefinitely to capture and waste millions of pounds of lobster, crabs, salmon, and other commercial species which rot and act as bait to attract and waste more of these valuable resources.

Plastic debris also ensnares, entangles and drowns thousands of marine mammals, birds and sea turtles every year. Some marine wildlife, for example, whales and sea turtles, ingest plastic which blocks their alimentary canals and leads to starvation.

What is the answer to getting rid of this harmful debris? One solution is to educate those who are the sources.

This Saturday, thousands of citizens will walk the Texas coast line to pick up trash and record the types, sources and amounts of the debris on CEE data cards. CEE's Texas beach cleanup last year not only collected more than a ton of junk per mile, but it made citizens and policymakers more aware of the problem.

Through a multi-media campaign aimed at industry and the public, CEE, the National Marine Fishery Service, and the Society of the Plastics Industry are cooperating in an effort to make those who are part of the problem part of the solution.

Other approaches include regulation of the debris items themselves. For example, we support proposals to require that all six-pack rings be made degradable. We believe that other products, such as fasteners for fish traps may thus be made degradable as well.

Such approaches have merit, but only if they focus on those items known to cause a problem. It is neither practical nor desirable to require that all plastic be degradable.

Another regulatory approach is to control the disposal of plastics. Implementing MARPOL Annex would help to do just that by prohibiting ocean disposal of plastics and by limiting disposal of other wastes to certain distances from land. We look forward to Senate ratification of this international agreement.

In implementing Annex V in the United States, any scheme that is going to work must take into account the diversity of vessel types and the vast differences of our systems of ports and harbors.

Implementation must provide incentives to bring plastic trash back to port, procedures and facilities that make it reasonable and economical for ships in ports to handle the trash, and the means and resources for government to enforce compliance with the law.

CEE believes that record keeping and vessel inspection are important elements for verifying on-board incineration or other proper ocean disposal in accordance with Annex V. We support dockage fees to help ports cover the cost of waste disposal.

Any implementation must also involve the inspection, and enforcement and cooperation of all Federal agencies which have a presence in our ports, from the Coast Guard to the National Oceanic and Atmospheric Administration to the Department of Agriculture and the Environmental Protection Agency.

Further, citizen suits and provisions for reward from penalties for those who help apprehend violators will aid enforcement. Perhaps the major element that is missing in several of the proposals for implementating Annex V is a requirement that U.S. public vessels meet the standards by Annex V by a time certain.

I have been disappointed by the Navy's response to the challenge for it to identify alternatives to its customary practice of ocean dumping.

While recognizing problems of national security, we do not feel that they have taken the most aggressive stance in doing what they can do now. There are many alternatives for local port activities and for different kinds of vessels that the Navy could take advantage of to diminish the amount of debris that they dispose of in the ocean.

We would urge the the committee either require a date certain and/or require a report from the service to ensure that it will move as quickly as possible toward solving this problem.

Thank you very much.

Senator **Mitchell**. Thank you, Mr. McManus.

Senator Chafee.

Senator **Chafee**. Thank you, Mr. Chairman.

I wanted to ask Mr. Douglas, in your testimony, you say, "Fishermen are recognizing the problem of fishing gear being disposed and are tackling it." What instance do you have of that?

Mr. DOUGLAS. Senator, I want Senator Mitchell to know that you and I did not orchestrate this, but this is an example of a piece of public education that was done by the fishing industry. We assisted them, but they printed it at their expense.

The Northwest Pacific Group did this. These folks are very knowledgeable and understanding of the problems of plastic debris, and particularly how discarded nets can entangle various wild fowl and marine mammals.

They recognize, as I am sure everyone does, that you are bound to lose this gear in normal operation, but they are going out of their way to try to educate their fellow fishermen to try not to lose it, and if they pull some of it up, to try to bring it ashore.

In fact, we have instances where they have brought ashore derelict net in the Pacific Northwest only to find out that there was no one on land who was able to take it and do anything with it, which leads us on to another problem of how we get to port facilities that can indeed accept this kind of problem.

That is in a nutshell, Senator, an example of how the fishing industry is aware of the problem, and I believe, in all faith really wants to help be a part of the solution. They also want other people, who are part of the problem, to help be a part of the solution as well. They don't want the full blame for this problem, and certainly no one is putting that full blame on them.

Senator CHAFEE. I just want to say that I think that few of us understand the totality of this problem. I had the privilege last summer of meeting the sailors who singlehandedly sailed around the world returning to Newport. They had taken a pledge that on each leg of the voyage they would not dispose of their plastic material. You wouldn't think that one sailor could generate that much plastic waste.

Each of them, even in their confined situation saved their plastic waste. I saw what they had generated and saved on the last leg of their voyage, which was from Rio de Janeiro to Newport. It was amazing.

Furthermore, each of them reported that in these lonely voyages, which took them into the southern latitudes, miles away from anyone, they encountered plastic bottles bobbing on the surface of the water.

Furthermore, I have had reports, from the Mediterranean, the Greek Islands, and I don't want to single them out, but I know individuals who have been there, the beaches are as littered as they are in Texas and here.

So this is a worldwide challenge, and I don't quite understand why you, Mr. McManus, said that it is not desirable that all plastics be degradable. Why not?

Mr. MCMANUS. The first answer to that is, degradable into what? We want to make sure that if they degrade, they are not degrading into a product that is harmful to the environment or maybe harmful in another way.

For example, there has been some concern expressed about birds and other animals ingesting small bits of plastic and the effect that that may have on their physiology. If we, indeed, allow plastics to be made degradable that simply break down into smaller pieces, that may create more problems than the larger items.

The other issue that has to be looked at very carefully is what kinds of items are we talking about?

For example, there was earlier allusion to the notion that disposable plastics might be made degradable, and that is certainly a good beginning. We wouldn't want, for example, plastic bushings or other parts of machinery to be degradable if there was no reason for them to be so.

The other problem, of course, is what kind of degradability would you assign to, for example, a plastic bottle. I am concerned, for example, that you wouldn't want to have a plastic coke container degrading on you prior to its use, or degrading into some component within the contents that might be harmful.

I would not suggest that we shouldn't make things degradable that can be made degradable and would benefit wildlife and the environment. I do just simply add a cautionary note that we have to be careful and think about what the consequences of making those products degradable would be.

Senator CHAFEE. Some 11 States, including my own, have enacted legislation mandating that six-pack holders would be degradable. It is wonderful to pass a law decreeing that something will be degradable, but what is happening on that; does anybody know?

How are they producing a special six-pack holder that goes to Rhode Island and perhaps Maine, but not to another state? Could you give us a little report on that?

Mr. MCMANUS. My understanding is that there are only a few manufacturers of six packings and that the industry is not too concerned about making flese products degradable. But I would urge you to pose that question to those who may be better informed, particularly industry representatives, about that case. My understanding is that they don't foresee any problems in complying with that kind of requirement for that product.

If I may add, another product that we have suggested that may be made degradable are fasteners for fish traps. Fish traps that are routinely lost or discarded can continue to catch fish for years and years to come.

We have suggested that it may be advisable to review the possibility of routinely requiring degradable fasteners for those traps so that if they are lost, at least a portion of the trap will fall apart so that the device will stop acting as a trap.

Senator CHAFEE. Mr. Douglas, you said that you are opposed to S. 559 because you folks are conducting your own studies and you have this task force, which the gentleman with you heads, or does he head the Northwest part of it?

Mr. DOUGLAS. No, sir, the entire Entanglement Program is headquartered in the Northwest Center. But it is nationwide as far as we are concerned.

Senator CHAFEE. So you are saying that since you are doing all this, we don't have to get into the act. That is fine, but how do we know you are going to come to a conclusion some day?

Mr. DOUGLAS. I am hopeful, and certainly optimistic, that the 10 agency working group that is operating under the auspices of the Domestic Policy Council Working Group for Energy, Natural Resources, and the Environment, which is a direct response to a letter written by 30 of the Senators, which I believe you two gentlemen signed——

In any event, 30 Senators signed and asked the White House to convene such a group to deal with what is now going on in terms of studies, what needs to be done, identifying gaps in the knowledge, and where does the expertise and where the responsibility and authority lie.

Senator CHAFEE. We are short of time, Mr. Douglas. When are you going to finish the study?

Mr. DOUGLAS. In 6 to 9 months.

Senator CHAFEE. Six to nine months from now?

Mr. DOUGLAS. From about a month ago.

Senator CHAFEE. Scout's honor?

Mr. DOUGLAS. April of 1988.

Senator CHAFEE. That is a pledge?

Mr. DOUGLAS. Otherwise I will be back up here to explain why not.

Senator CHAFEE. You bet your boots, you will be back here explaining why not.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Chafee.

Thank you very much, gentlemen, for coming, and we look forward to hearing from you.

We are now going to call up the next panel, and then I will recognize Senator Durenberger for any opening remarks he has. The next panel includes the Honorable Everett Pyatt, Assistant Secretary for Shipbuilding and Logistics of the Department of the Navy; Capt. Charles Corbett, Special Project Officer in the Office of the Secretary of Transportation; Mr. Ernest J. Corrado, President of the American Institute of Merchant Shipping; Mr. Erik Stromberg, President of the American Association of Port Authorities; and Dr. William Y. Brown, Director of Government Affairs for Waste Management, Incorporated.

Would you, gentlemen, please come forward. As you are doing so, I want to recognize Senator Durenberger, one of the most active and contributing members of this committee, and see if he has any opening statement he would care to make.

Senator DURENBERGER. I have no statement at this time, Mr. Chairman.

Senator MITCHELL. Gentlemen, good morning. We look forward to hearing from you. You are all aware of the rules of the committee. We will begin with Mr. Pyatt who is in regular contact with the Congress. We welcome you again, Mr. Secretary, and look forward to hearing from you.

Senator CHAFEE. Mr. Chairman, if I might also join in the welcoming of Mr. Pyatt. He and I have had many dealings over the past several years. He is certainly responsive and helpful in so many ways.

As you can see by his very title, Assistant Secretary for Shipbuilding and Logistics, of all the Assistant Secretaries, I think he has the most contentious problems to deal with.

We are very grateful to you, Mr. Pyatt, for taking the time to come up today.

Senator MITCHELL. They are much less contentious so long as he keeps providing plenty of ships for the Maine shipyards. That keeps the contention down.

STATEMENT OF EVERETT PYATT, ASSISTANT SECRETARY FOR SHIPBUILDING AND LOGISTICS, DEPARTMENT OF THE NAVY

Mr. PYATT. That is what the folks from Mississippi keep telling me, too.

Senator MITCHELL. You have to deal with each separate committee.

Mr. PYATT. I would just like to briefly say that the Navy complies with the MARPOL Section V, with the exception of the plastic provisions.

During the review of the last few days that I have been through, since I have picked up the project after a discussion with Senator Chafee, we feel that there are several things that we can do immediately, in the short-run, to reduce the amount of plastic thats get on ships and, therefore, has to be disposed of.

We are right now putting together a plan consisting of operational activities, procurement activities, and technology to bring the Navy into conformance with the MARPOL Section V quickly. I can't give you an exact schedule, but we feel that it is an important topic to act on aggressively, and we will do that.

I think that at some subsequent time, you may want to have a report from me.

There is a whole variety of things that we can do. One is operational control, telling folks what they can do. I think that one of our biggest problems is the disposal of trash outside the limits.

A ship generates a certain amount of trash every day, and our characteristic procedure is to dump it overboard from some ships in plastic bags. Some ships are equipped with incinerators and we use those. But there are other things that we can do and we will pursue those. Therefore, we support the enactment of Section V and support the Administration's bill.

In doing this review that I have been through in the last few days, I have also had several letters from Congressmen from various states, including Texas and New Jersey. The thread that I got from this was that if the Navy solved their problems, the pollution problem would go away. I would like to show a little map here of the Navy.

This map represents all the ships at sea on a given day in the Atlantic Ocean. There are some 17,000 ships here, and there are 100 Navy ships, three of which characteristically are in the Gulf, many along the Atlantic Coast, and many in the Mediterranean and other places in the Atlantic Ocean.

No matter what the Navy does, it is not going to make a measurable impact on the overall problem as you have heard it described this morning. We will attempt to be leaders in this field in controlling our folks, but the problems on the shores of Texas are still going to be there, because I doubt that three ships a day make a big difference.

This chart also represents the ships that report to Lloyds of London, which is where we got our data. There is another half of the world's merchant fleet that doesn't report to Lloyds. None of the fishing vessels report, and the pleasure crafts don't report.

Just as an example, we did a count, although the Coast Guard would probably have a better idea, worldwide of some 75,000 ships at sea a day, our Navy has about 200. In addition, in the United States——

Senator MITCHELL. Those figures that you just gave, Mr. Pyatt, are those that report; did I understand that?

Mr. PYATT. Yes, and there are more that don't report. These are just to help to scope the problem.

In addition, in the United States, we have ten million pleasure crafts. I am sure that the Coast Guard has better numbers than we do. But this can help size the problem, the amount of generation that goes on. Bringing the Navy into conformance, which I said before, is not going to make a major difference.

We will try to be leaders and force our people to think through it. Perhaps in some of these areas, we are large enough buyers in the market to help influence the market.

This concludes my statement.

Senator MITCHELL. Thank you, Mr. Pyatt.

Captain Corbett.

STATEMENT OF CAPT. CHARLES R. CORBETT, SPECIAL PROJECT OFFICER, OFFICE OF THE SECRETARY, DEPARTMENT OF TRANSPORTATION

Captain CORBETT. Mr. Chairman, good morning.

I want to assure you that I don't have the figures that Mr. Pyatt said we have with me today, but if you have an interest in them, we will try to round those up at some future time.

Mr. Chairman, the Coast Guard is very concerned about the hazards to the marine environment, especially plastics and other synthetic materials, including synthetic fishing nets.

Our principal statute right now is the Refuse Act. However, this statute is difficult to enforce and prosecute since the violation carries a very small criminal fine. As you know, the Refuse Act was created for an entirely different purpose.

It is also important to note that the marine debris problem is not unique to the United States coastline. The plain reality is that the U.S. cannot resolve this problem alone. It requires an international solution.

As you know, MARPOL is the primary international regime aimed at preventing discharges into the oceans from ships. Annex V addresses garbage. In brief, the annex prohibits the disposal of all plastics into the ocean, and also prohibits the disposal of other forms of garbage within specified distances from shore.

There are two major advantages to ratifying Annex V. It offers harmony and uniformity by establishing international standards to address an international problem. The plain fact is that we need action to prohibit or control the disposal of garbage at sea worldwide in order to solve the problem here at home.

Also, by adopting Annex V, we would demonstrate our resolve to protect the marine environment, giving due consideration to the joint efforts of the international community.

The Coast Guard believe that working through MARPOL will ultimately facilitate better international cooperation regarding compliance with the provisions of Annex V. For example, Mr. Chairman, we have experienced very high compliance rates for Annex I provisions of MARPOL which deal with oil. This is the kind of success that is achieved by solving global problems with global solutions.

As you know, several bills have been introduced in the House and the Senate to implement Annex V. A legislative proposal has been submitted to both the House and the Senate by the Administration. We are most pleased to note that S. 560 has been amended and S. 562 introduced to reflect this proposal.

The Administration supports legislation that applies Annex V regulations through appropriate amendments to the Act to Prevent Pollution from Ships. This Act already provides the legal structure for applying the provisions of MARPOL annexes and includes, very importantly, the MARPOL Annex Amendment Procedure.

MARPOL provides for enforcement on a port state/flag state basis. Our proposal would rely on this regime, which has proven to be very effective in obtaining broad international acceptance of MARPOL, prompt agreement on U.S. sponsored and supported measures to improve Annexes I and II, very high worldwide Annex I compliance rates, and meaningful penalty action for violations of Annex I requirements. It is very important that the effective date of the U.S. statutory regime implementing Annex V be linked directly to its entry into force.

The next few paragraphs in my prepared statement discuss the coming into force and what is required. I won't read those because they can get a little heavy. They are in the long statement.

Suffice it to say that the situation worldwide right at this moment is that if the United States were able to ratify Annex V today, it would be in force 12 months from that date. So the United States is in a pivotal position at this particular moment. Everybody is watching us.

Substantial criminal sanctions in Annex V regulations are critical to achieving effective enforcement. Our proposal would apply the same sanctions and penalties that are currently in the Act to Prevent Pollution from Ships.

Our legislative proposal also requires that persons in charge of specified ports and terminals provide garbage reception facilities, and it provides the authority to deny entry of a ship to a port or terminal if the port or terminal is not in compliance, a very important provision.

Representatives from the Department of Agriculture and other sources have advised us that they anticipate reception facilities voids being filled by private industry. The Coast Guard will require compliance with DOA regulations in the regulations relating to reception facilities.

Mr. Chairman, the Administration's proposal would provide the flexibility necessary for enforcement and compliance with Annex V. The guidelines, which we are preparing with IMO, will measurably assist in worldwide enforcement of the Annex.

In closing, I want to emphasize that the approach being sought by S. 560, as amended, by S. 1562, and the Administration proposal, offers the best opportunity and flexibility to facilitate the essential internal and international cooperation, in addition to providing full protection for the U.S. coastline.

The Coast Guard will be pleased to work with your committee in suggesting implementing language or on matters relating to Annex V.

Thank you, Mr. Chairman, we will be pleased to answer any questions that you or the members of the committee might have.

Senator **Chafee**. Thank you very much, Captain. I appreciate your testimony.

The next witness is Mr. Corrado, President of the American Institute of Merchant Shipping.

STATEMENT OF ERNEST J. CORRADO, PRESIDENT, AMERICAN INSTITUTE OF MERCHANT SHIPPING

Mr. **Corrado**. Thank you, Mr. Chairman.

I am also authorized to speak for the Maritime Institute for Research and Industrial Development, MIRAID, for the Council of American Flag Ship Operators, CASO, and for the Joint Maritime Congress, JMC.

Our organization, Mr. Chairman, has long been active with respect to MARPOL, and we have worked on all five annexes of MARPOL, so we certainly favor Annex V. We have worked on MARPOL and all 5 annexes in the past. We are in favor of ratification of Annex V. We also favor Mr. Studds's bill in the House and support S. 560, S. 633 and S. 1562, and the Administration proposal, with some changes, of course.

We think that these provisions should be put into the Act to prevent Pollution from Ships, which these bills all do. We feel that this is the proper way to approach the problem. For commercial vessels, the solution, we feel, must be these pieces of legislation, the Act to Prevent Pollution from Ships, and through the provisions of Annex V of MARPOL.

We, as you will see from our prepared statement, Mr. Chairman, have a number of suggestions with respect to enforcement concepts for plastic and general garbage dumping into the ocean.

We feel that the crew should have some training and education with respect to Annex V and the handling of plastics and general garbage disposal. We favor some kind of program of placards on the vessels for educational purposes, education of the crews that will handle their plastic and gabrage disposal.

We favor reception facilities in the ports for receiving plastic and garbage. We do recommend flexibility, however, with respect to all of these provisions.

As you know, Mr. Chairman, marine vessels carry log books in which they make entries of all marine operations, including safety and pollution. We would recommend that the log books be required to have an entry with respect to compliance with Annex V.

We would favor that these enforcement provisions be regulatory, rather than legislative, Mr. Chairman, for reasons of flexibility and ease of change.

Lastly, we would recommend some sort of a monitoring system be set up so that all the parties that are involved in this problem will have a place to consider where this is being complied with. We are especially strong in our desire for a monitoring system, Mr. Chairman, for the following reason:

As you know, this pollution occurs not just from commercial vessels, but naval vessels, fishing vessels, onshore pollution, recreational vessels, municipal runoff, etc. Publicity recently has indicated that this pollution comes 80 percent from commercial vessels.

Certainly, people have dumped in the ocean from time immemorial. When you have a guy 1500 miles at sea they dump, and it has to stop. But we are not the only source, and we reject the notion that we are even 80 percent of the source or anywhere near it, 20 percent is more like it.

I recently witnessed thousands of styrofoam cups washing into the Houston ship channel in a rain storm from municipal runoff. Recently, I was at the beach in Rehoboth, Delaware, and the wind shifted in the last day or two I was there, and all of the medical refuse that was fouling the beaches in New Jersey came down on our beach. There were syringes, plastic containers, and plastic vessels, and needles, etc. That refuse surely, in neither instance, came from our vessels, Mr. Chairman, but really you had to worry about going in the water because you didn't know what was in those containers.

We feel that we don't want to be the only ones left out to dry. In the hearings in the House, 97 percent of the hearing was devoted to commercial vessels, and the same thing in the markup. There was hardly a word said about these other sources of pollution.

We are going to try to do our best with respect to the mandate of Annex V and the various bills, but we don't want to be the only party complying and regulated, and that is why we would recommend, Mr. Chairman, some sort of a monitoring device so that if pollution continues in this way, we will be able to say what we have done and determine who the other potential sources are doing with respect to compliance.

This would conclude my remarks, Mr. Chairman, and I would be more than happy to answer any questions.

Thank you, sir.

Senator **Mitchell**. Thank you very much, Mr. Corrado. We appreciate that.

Mr. Stromberg from the American Association of Port Authorities.

STATEMENT OF ERIK STROMBERG, PRESIDENT, AMERICAN ASSOCIATION OF PORT AUTHORITIES

Mr. **Stromberg**. Thank you very much, Mr. Chairman.

I appreciate and I must admit I find uniquely gratifying the opportunity to testify on this special day.

On the subject of today's hearing, AAPA shares your concern for solving the serious pollution problem.

AAPA, by way of background, represents virtually all of the public port authorities in the United States, as well as the major port agencies in Canada, Latin America, and the nations of the Caribbean Sea.

Our member ports are, without exception, public entities which own marine terminals and other facilities necessary for the conduct of waterborne commerce.

I believe it is important to note that in most U.S. harbor areas there are many private-owned terminals which are outside of our jurisdiction.

In general, we support the Administration's approach and S. 560, as well as H.R. 940, as recently amended. We believe that improved handling of waste on board vessels will lead to the most effective and efficient means of shore side disposal.

In addition, and importantly, any legislative solution should be flexible enough to take into consideration the wide range of local circumstances and conditions, and should not rigidly mandate our member port authority to be directly responsible for the construction and operation of shore side facilities.

Public port authorities are prepared to continue our efforts to work with local and state governments to assure the provision of the shore side facilities required under Annex V as we have under Annexes I and II.

Upon implementation of Annex V, there are expectations of an increased demand for waste disposal services in port. Our view is that there is no guarantee that such will be the case in all ports.

As is the case with other terminal facilities, cost and service will influence the decision to off-load garbage at any given port.

For uncontaminated trash, plastics and garbage, reception facilities are now generally available. However, there is a complicating factor for garbage of foreign origin regulated by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, APHIS, requiring incineration or sterilization.

The potential problem lies in the availability of APHIS approved reception facilities in every port and harbor area. It will be made more severe if there are, in fact, significant volumes of trash, especially plastics, that are contaminated by regulated garbage.

However, I should note that, under Annex V, non-plastic biodegradable garbage and trash may be dumped off-shore at specified distances, which will likely continue to prove to be a feasible and appropriate option to the vessel operator, and which will likely dimimish the potential demand for APHIS approved disposal facilities.

In order to assess the existing availability of waste disposal facilities near ports, and at the request of congressional staff, we surveyed our membership. The results of our survey indicate that approximately 60 percent of AAPA U.S. members have facilities, which are capable of handling regulated waste, available in their port areas. At least 70 percent of these facilities are located within ten miles of the port.

The provision of various services required by ships in port is currently handled either by the ship's agent or by the local office of the steamship line. Included in such services provided are the arrangements for ship waste removal.

Among the 40 percent of our members that do not presently have APHIS approved capability are a few of the larger port areas in the country, but the majority of those without available facilities are our smaller members, with limited financial resources.

In some cases, especially in the more urban areas without facilities, efforts are already underway to build an incinerator in proximity to the port.

Given these circumstances, and the fact that it can be extremely difficult to site and obtain permits for an incinerator, we believe the Coast Guard should have as much flexibility as possible to enforce the law and to give needed n consideration to each individual situation.

In conclusion, Mr. Chairman, we believe the implementation of Annex V regulations will likely stimulate market-based efficient solutions to the plastic disposal problem.

If ship operators can keep their plastics separated from material that is of concern to APHIS, port authorities and terminal operators should not have major problems doing their part in complying with the requirements for non-contaminated trash. Plastic waste can be disposed of in the same manner as most terminal trash.

More importantly, vessel operators will have an incentive to decrease their use or eliminate nonbiodegradable packaging since disposal services can be costly.

Finally, private sector waste management companies are now available, as indicated in our survey, in the majority of port areas to transport contaminated waste to an approved facility.

Mr. Chairman, the public port industry recognizes the seriousness of this problem and stands ready to assist Congress and the Coast Guard to find the most efficient and cost effective means to dispose of ship wastes in each local situation.

I would lastly, with your indulgence, submit for the record, as requested, the statement of Jim Kirk, the Port Director of the Port Authority of New York and New Jersey, and I will summarize that very briefly in one paragraph.

The Port Authority of New York and New Jersey concurs in the view that I have just outlined. That port is without incineration facilities on the New Jersey side of the harbor.

Based on experience to date, and the high cost associated with the disposal of solid waste in that state, Mr. Kirk believes that there will be little demand for port side collection services. As the statement notes, food waste can be expected to be disposed of at sea and fully in compliance with Annex V.

Accordingly, the Port Authority recommends that neither the legislation nor the implementating regulations should be so rigid as to require, without exception, the construction of incineration facilities.

I will make available the complete testimony if that is all right with you.

Senator **CHAFEE**. Fine. Thank you very much, Mr. Stromberg.

Senator **PRESSLER**. Mr. Chairman.

Senator **CHAFEE**. Senator Pressler, did you have a statement that you would like to put in now?

OPENING STATEMENT OF HON. LARRY PRESSLER, U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator **Pressler**. I have a statement on the subject of plastic waste. I will not take the committee's time to read it, but I ask unanimous consent to place it in the record.

Senator **Chafee**. Certainly. Is there anything else that you wanted to say at this time?

Senator **Pressler**. No.

[Senator Pressler's statement follows:]

Opening Statement of Hon. Larry Pressler, U.S. Senator From the State of South Dakota

Mr. **Presser**. Mr. Chairman, I commend you for scheduling this hearing on pollution from plastic waste. This is a very serious problem which needs to be addressed.

Modern technology produces products which are very convenient and useful for consumers and industry but which create unfortunate environmental problems. Plastic containers and other products are an example of this. Plastic are very flexible and do not break, but they also do not decay. As a result, plastic dumped into the ocean or left along a roadside will remain there for many years. It creates an eyesore and problems for fish and wildlife. People must be more conscious of the unique problem of plastics. Efforts are needed to discourage ships from dumping garbage in the ocean.

We must also recognize that this problem is international in scope. As with so many environmental issues the United States cannot clean up the oceans alone. All nations must cooperate on this problem. I am pleased to see the progress that has been made in the International Convention for the Prevention of Pollution from Ships, but we must continue to encourage other nations to end this practice. As a member of the Senate Foreign Relations Committee I will work for early action on the ratification of this resolution.

Mr. Chairman, thank you for recognizing me and I look forward to hearing the witnessess.

Senator **Chafee**. All right, fine. Thank you, Senator Pressler.

Dr. Brown, Director of Government Affairs for Waste Management, Inc.

STATEMENT OF DR. WILLIAM Y. BROWN, DIRECTOR, GOVERNMENT AFFAIRS, WASTE MANAGEMENT, INC.

Dr. **Brown**. Senator Chafee and Senator Pressler, it is a pleasure to be here.

Waste Management, Incorporated, is the largest municipal and industrial waste handling company in the world. We have more than 400 divisions operating in 45 States and on five continents. Waste Management also provides a waste reduction service for hazardous waste generators, and currently manages about 140 solid waste recycling operations. We expect this number to rise to 400 within the next year.

Waste in the sea is part of a larger problem of waste in our society. The statistics are riveting: each year the United States produces more than 250 million tons of hazardous waste; nearly a half million 55-gallon drums of commercial low-level radioactive waste; 136 million tons of municipal refuse; more than ten billion tons of other solid waste, much discharged with little regulatory control or monitoring into some 191,000 waste ponds scattered across the country; and we also produce over one trillion gallons of sewage.

Ship generated wastes are a small volume of this larger problem, but they are acutely hazardous in the form of plastics that entangle marine organisms and fill their stomachs, and they are particularly unattractive as persistent coastal debris.

If limited agricultural statistics are representative, effective enforcement of MARPOL Annex V may generate about one-quarter of a million tons of shipboard waste per year at U.S. ports. Over 70 percent of the ships reported discharging waste at U.S. ports were of foreign origin.

The Agriculture Department, through its APHIS Bureau, requires off-loaded foreign garbage to be incinerated or sterilized by cooking. APHIS generally does not allow raw garbage to be transported through rural areas for ultimate incineration, although exceptions apparently are sometimes made.

Despite these Agriculture Department requirements, I believe that the ports and ship owners and operators can count on our company and others as willing and able commercial partners for proper treatment and disposal of off-loaded waste.

Many of the major ports already have access to facilities that should be adequate. For those that do not, it should be possible to site incinerators or cookers of some kind, although incineration is controversial and siting is typically protracted.

Ports or some form of appropriate local government may help to site facilities by serving as coordinators or sponsors. However, it should generally be feasible to establish and operate facilities without underwriting from the Federal government.

The Administration has stated that its bill has "potential cost implications to both the Federal Government and private industry." We have no quarrel with that statement, except to note that the proposal also has revenue implications for the pollution control industry, and our company in particular.

Incineration at existing municipal facilities is likely to be less expensive than incineration or cooking at new facilities placed at ports for this purpose. Furthermore, remote ports present a special problem because of the volume of garbage may not justify commercial investment in new facilities.

For these reasons, it may be wise for the agriculture Depertment to authorize waste transport through rural areas, if necessary, to reach an existing incinerator. The Department could require any necessary measures to ensure that domestic or wild animals will not gain access to the trash.

The EPA and Department of Transportation, as you know, currently oversee detailed requirements for transportation of hazardous waste and product chemicals. Agriculture could draw on those programs to the extent necessary. It ought to be easier to keep pigs out of the trash than hydrofluoric acid out of the air.

Enforcement, in my view, is the key variable on which the success of MARPOL Annex V will stand or fall. Unless enforcement is effective, I am concerned that plastics still will be dumped at sea because of convenience and cost.

I believe that MARPOL Annex V implementing legislation should give the Agriculture Department a mandated role in enforcement of the law. Agriculture currently inspects most of the off-loaded foreign garbage whereas this would be a new task for the Coast Guard, one in which they have little experience and which would compete with other priority activities, such as controlling the drug trade. Nothing is more important to Agriculture's APHIS Bureau than preventing introduction of foreign disease-carrying biotics.

At a minimum, it would seem absolutely necessary for records to be kept of trash discharges. A log could be kept for this purpose. An experienced APHIS or Coast Guard inspector might review logs most closely when little or no trash is off-loaded. If the records look odd in light of the particular circumstances, the inquiry could go further.

I believe implementing legislation should require public vessels to observe standards of trash disposal no less strict than those required for private vessels. Although the MARPOL Treaty provides an exemption for these vessels, stricter domestic measures are authorized. It is difficult to understand how sound trash management by U.S. public vessels could be incompatible with preparedness for battle.

Compactors and incinerators are the obvious available technology. It simply is not necessary for aircraft carriers in routine operations to toss plastic garbage bags off the fan-tail every day at dusk. Public trash looks just as bad as private trash when it floats up on our beaches. I am pleased to hear that the Navy Department, as I understand it, is planning to be more aggressive than they may have indicated at past hearings.

Finally, Mr. Chairman, on top of all this, public education is key. The Center for Environmental Education made a number of suggestions, but as the Navy pointed out there are a lot of vessels in the sea, most of them are not Navy, most of them are very small, and we need to make sure that people know about this requirement, or they won't even know about it to obey it.

Thank you, Mr. Chairman.

Senator CHAFEE. Thank you very much, Dr. Brown.

Mr. Pyatt, is there anything we can learn from what our submarines do as they dispose of their garbage in plastic that could be incorporated into other vessels?

Mr. PYATT. It is a possibility. The submarines compact it, weight it down, put it in bags and sink it, that is one approach. I think other vessels have less weight constraints, and there are other approaches that may be better than that.

Senator CHAFEE. First of all, I want to say that I fully agree with concept that you set forth, that the Navy is but a tiny portion of the total ships at sea at any one time. The Navy is helpful when they can set an example and perhaps experiment and see how different approaches work out. It is one of the virtues of the capability of the Navy.

Has any thought ever been given to ordering the supplies to come aboard with less plastic than is normal?

I know that this is difficult. The other day, somebody gave me a carton of cranapple juice and it all came in plastic bottles as opposed to the glass bottles that it came in in the past. I think the trend is to put more things in plastic than was previously true. But does the Navy make any effort, or is it not gotten into that yet?

Mr. PYATT. That is one of the things that I had in mind when I said that we need to explore some other approaches. When we started looking at the input of plastic, we found a lot of it is shipping containers and protective packaging. I am amazed at how much shrink wrap we use and how much of the plastic popcorn we use to protect very expensive parts. All those things are part of the things that come to a ship. We need to study and think about it, and also look at how we can destroy what gets there.

Senator CHAFEE. Captain Corbett, let me ask you this. Have you ever brought any actions under Annex I or II of MARPOL?

Captain CORBETT. Do you mean, have we had actions referred to us to take punitive action?

Senator CHAFEE. That is right, against vessels.

Captain CORBETT. I believe that we have had just one on which a penalty was assessed of $450.

Senator CHAFEE. Annex I is what, discharge of oil residues?

Captain CORBETT. Yes, sir.

Senator CHAFEE. All these vessels have just complied, they haven't pumped out the residue from their bilges and from their tanks?

Captain CORBETT. This, of course, would be for U.S. vessels, and we hope that our U.S. vessels have pretty good behaviors as far as water pollution is concerned and act responsibly. Perhaps this is an indication that they are. Of course, we monitor them quite closely here with our inspections and so forth, so it is not surprising to me that we have had only one.

Senator CHAFEE. What do they do when they come in port and they have a little sludge in the bottom of their tanks, and they want to switch to carry a different product?

Some of these liquid carriers can transfer to dry cargo, can't they?

Captain CORBETT. That is the very point of having adequate reception facilities.

Senator CHAFEE. Could you pull that mike a little closer please?

Captain CORBETT. That is the very point of having adequate reception facilities so that they can clean those tanks. Rather than pump out the oils at sea, they bring them into port, pump them into a reception facility, which is then disposed of in accordance with the law.

Senator CHAFEE. Do most of the ports have those facilities?

Captain CORBETT. Those that service the types of ships that have those needs and have that kind of cargo, yes, sir.

Senator CHAFEE. Currently, when a nation has signed on to MARPOL, no matter what the Annex, the U.S. does not enforce it against what, a foreign nation that is a signatoree to the Treaty?

Captain CORBETT. I am not following your question, Senator.

Senator CHAFEE. My question is, do you only take enforcement actions against U.S. ships?

Captain CORBETT. No, we take enforcement action against any ship in the navigable waters or the territorial sea. But if it is outside of the territorial sea, then we would normally forward a violation report to the flag state, and they, at that stage, would investigate the case more thoroughly and assess a penalty.

Senator CHAFEE. What are the mileages, what is the territory?

Captain CORBETT. Normally, we refer to the three-mile limit.

Senator CHAFEE. Anything over the three-mile limit, you see as a transgression by a foreign nation, you refer it back to them?

Captain Corbett. Under S. 1562 and S. 560, as amended, only if that foreign nation is a party to the treaty. If that ship is not a party to the treaty, then we would take enforcement action unilaterally.

Senator Chafee. How much of a drain on your manpower is the enforcement of these various annexes? Is it a problem? We had witnesses yesterday on another challenging matter dealing with licensing of fishing vessels, or possible licensing of fishing vessels.

Captain Corbett. I wouldn't say that the Coast Guard has no budgetary problems in carrying out any of our missions.

Senator Chafee. We will take it as a given that any military service has budgetary problems.

Captain Corbett. Just the same, I suggest that when we undertook the Annex I and Annex II responsibilities, we budgeted for people to do the job. As I understand it, they are able to do the job.

As far as Annex V is concerned, I don't have with me at this time the Coast Guard resources we would require to take over that, but I believe that we can do it with the patrols that we are now conducting, and that the inspection parties which inspect for Annex I and Annex II violations can probably handle the Annex V violations as well.

Senator Chafee. Let me ask Mr. Corrado and Mr. Brown, I think that both of you referred to the logs and the validity of logs, could you echo that a little bit?

In other words, entries in logs are pretty serious matters. As I understand, only licensed personnel can enter into logs, so relying on a ship's log is a pretty reliable indicator. Is that correct?

Mr. Corrado. Yes, sir, and that is why we think that this is an effective process because a master can lose his license if there is misinformation. So we feel that a master who has to make a number of entries for safety and pollution purposes, and also for Annex V purposes, in the operations of the vessel will be very careful with respect to his entries.

Senator Chafee. Is that U.S. masters or any master?

Mr. Corrado. Any master, all masters, I think, universally, keep log books. It is something that has always been done by the maritime nations and the vessels of the world. It is a way of keeping order and a record of what is going on, so you have a written history of what has happened on the voyage. Since the master can lose his license for incorrect entries, we feel it will be an accurate record of compliance with Annex V.

Dr. Brown. I would only add that it is hard for me to imagine what else one might do. I gave some thought to whether it might be wise to have a manifest system for the discharge of waste modeled on the hazardous waste system.

There also has been some discussion about whether there ought to be a flat out waste discharge requirement, i.e., when a ship docks at a port that it be required to discharge waste, unless it can prove that it has none for some legitimate reason. I don't see, when you think about that, what they really add that a log keeping requirement would not do.

Senator Chafee. A final question of Mr. Pyatt.

Do you have any timetable? You indicated that you were going to expedite implementation of some environmentally sound garbage compacting or disposal system. Do you have any timetable that you envision on that?

Mr. PYATT. I am still working on what I think it can be. I think that it can be considerably shorter than any number that you have heard before.

Senator CHAFEE. To you, Mr. Pyatt, there is a question that Senator Mitchell and Senator Lautenberg would want to ask, and it goes as follows:

What types or classes of Navy ships could more easily comply with the prohibition on discharge of plastics at sea? The question arises because the Navy has written to the House Merchant Marine and Fisheries Committee that "In the short term, because of risk to crew safety and health, compliance is not possible for any class of ship." I don't quite get that.

Mr. PYATT. I don't either.

Senator CHAFEE. That is not a Pyatt statement?

Mr. PYATT. No, sir.

Senator CHAFEE. I don't get why it is a risk to safety and health.

Mr. PYATT. One concern we have about plastics on ship is that they are dangerous and we would like not to accumulate because of the fire hazard primarily. But there are many ways to approach a problem, and I think that we haven't shown our full creativity so far.

Senator CHAFEE. We look forward to seeing that full creativity, and we will stay in touch with you.

Mr. PYATT. Yes, sir.

Senator CHAFEE. Thank you very much, Mr. Pyatt.

There is a vote, and I have to get over there. Senator Mitchell is on his way back. So let's take a short recess. Senator Mitchell will be right back and start with the next panel.

Thank you all very much. I appreciate it.

(Recess)

Senator MITCHELL. The subcommittee will come to order.

We will now call our last panel which has Mr. Tudor Davies, Director of the Office of Marine and Estuarine Protection of the Environmental Protection Agency; Mr. Lewis Freeman, Vice President of Government Affairs for the plastics industry; and Dr. Anthony Andrady of the Research Triangle Park in North Carolina.

We will proceed with Mr. Davies.

STATEMENT OF TUDOR T. DAVIES, DIRECTOR, OFFICE OF MARINE AND ESTUARINE PROTECTION, ENVIRONMENTAL PROTECTION AGENCY

Mr. DAVIES. Thank you, Senator.

My office is charged with the implementation of the Ocean Dumping Act, and the agency does not issue permits authorizing transportation of plastic materials for the purposes of ocean dumping. However, plastics are virtually ubiquitous materials in our society and find their way into the marine environment from a number of other sources such as disposal of waste generated by the operation of vessels, accidental loss, recreational vessels, and nonmarine sources such as storm water runoff and combined sewer overflows in urban areas. Because of this, and because of the adverse impact of plastic debris on marine life, we are very concerned about the effects of plastic pollution.

I would like to briefly refer to the letter of invitation which asked us a number of questions. The first issue that was raised in the letter asked us to identify specific plastic products whose use, misuse or improper disposal cause significant adverse effect.

Due to the variety of potential sources and the potential regional variations in plastic debris composition, the control of plastic pollution is complex and we necessarily would need to address a variety of sources and potential impacts.

Several Federal agencies are concerned about the impacts of plastic pollution and, under the auspices of the Domestic Policy Council, NOAA is chairing a task force to address this issue. We are a member of that interagency task force. The task force will assess the problem, the need for research, identify potential reduction measures, and consider alternative actions to address the problem.

While we support the basic intent of legislative proposals calling for studies, we urge that the work of the interagency task force be allowed to proceed to a conclusion before enactment of any plastic study legislation.

You asked us to address the need to evaluate and require the use of alternative products including those with degradable resins.

EPA believes that consideration needs to be given to the use of alternative types of plastics. Materials which bio or photo-degrade potential by pose less physical risk in the marine environment as they will eventually break down. However, in determining the appropriate role of degradable plastics in an overall control strategy, consideration would need to be given to determining what types of products might be targeted for the degradability. Potential effects associated with degradable plastics need to be addressed by the task force as well.

You asked us to look at the need to regulate the disposal and dumping in the aquatic and terrestrial environment, and the need for civil and criminal penalties to enforce the regulation.

With regard to the disposal of waste generated during the normal operation of vessels, we support the prompt entry into force of Annex V of MARPOL and support the Coast Guard's draft legislation to implement Annex V.

With regard to other potential sources of plastic debris, EPA needs to examine its activities under the Clean Water Act to determine what, if any, steps might need to be taken to address the discharge or run-off of plastics which might find their way into the marine environment.

Turning to the need for adequate civil and criminal penalties to enforce regulations related to plastic disposal, we feel that the Coast Guard's proposed legislation is preferable with regard to criminal penalties since it retains the existing Act to Prevent Pollution from Ships five-year criminal provision.

While we defer to the Coast Guard's expertise, we are intrigued by one provision of S.633 under which one-half of the civil or criminal penalty collected may go to an informant. Because violations of Annex V may take place on ships at sea, which are remote from most direct methods of surveillance, it would seem that this financial incentive would be an especially useful device in encouraging crew and passengers to detect and report violations. We have seen this particularly recently with a case in the Gulf of Mexico where we had an illegal hazardous waste dump.

The last two issues raised by the letter of invitation addresses the need to encourage proper use and disposal of plastic products through public education, and the need to evaluate the feasibility of labeling environmentally harmful plastic products to ensure proper disposal.

We believe that one simple and expeditious way to at least start reducing the impact of plastic debris is to alert the public to the impacts caused by improper plastic disposal so that they may take steps to alter their disposal practices.

While we do not view public education as a substitute for other potential control measures, we do see it as a useful tool which can be employed now with good effect.

With regard to labeling as to proper disposal practices for plastic products, we believe that an effective public education program can reduce the need for a widespread labeling campaign.

At this time, we are not in a position to identify what products might be appropriate for a labeling requirement and believe that initial efforts should instead focus on other control measures and public education before placing time and resources in investigation of the feasibility and benefits of labeling.

Thank you.

Senator MITCHELL. Thank you, Mr. Davies.

We will now turn to the next witness, Mr. Freeman.

STATEMENT OF LEWIS FREEMAN, JR., VICE PRESIDENT, GOVERNMENT AFFAIRS, THE SOCIETY OF THE PLASTICS INDUSTRY

Mr. FREEMAN. Good afternoon. I am Lewis R. Freeman, Jr., Vice President for Government Affairs of the Society of the Plastics Industry. Accompanying me this morning to assist in questions is H. Patrick Toner, Director of Technical and Regulatory Affairs for our association. We welcome the opportunity to be here.

The stated objective of this hearing as well as the several bills pending before the subcommittee is to seek ways of controlling and reducing pollution from plastic waste material. Before turning my attention to these bills and other questions posed in the call for the hearing, I wish to make a few general remarks about the plastic industry's views of the problem of marine debris.

No industry likes being singled out as the cause of a problem, and ours is no exception. However, the SPI recognizes that plastics behave differently than other materials in a marine environment and that the characteristics of those plastic materials that make them so preferable to use in a host of products sometimes become undesirable when they become waste and are discarded or lost in the ocean.

But marine debris is more than just a problem of plastics pollution, a term used so frequently to describe it. There is a broader problem of debris from all types of materials being discarded in the oceans. There will be a marine debris problem with or without plastics as long as a growing and affluent world population continues the overt, and sometimes covert, practice of using the oceans of the world as a convenient place to put waste. Plastic waste does not belong in the ocean, but neither do glass, metal, or paper wastes.

Turning to the legislation, among the features of the legislation pending before the committee, as well as other legislation in the Congress, the most important is that requiring the ratification and implementation of Annex V of the MARPOL Convention. SPI supports that Annex which would prohibit the dumping of garbage, including plastics, from ships.

With regard to two specific bills before this subcommittee, S.633 and S. 559, they call for the Environmental Protection Agency to undertake a study to determine methods for reducing and controlling adverse effects from the disposal of plastic products in the waters under the U.S. jurisdiction.

If a study is undertaken by the direction of this legislation or other legislation, we would offer the following recommendations to make the study more effective. A further study of the marine debris problem should determine what harm is being done by all debris, not just plastics.

Secondly, with regard to plastics debris, the charge to the study should permit the responsible agency appropriate latitude in considering what remedies to recommend, and should not bias the study by suggesting what the remedy should be prior to an appropriate determination and analysis of the problem.

Finally, the National Oceanic and Atmospheric Administration should be the agency designated to coordinate the study in cooperation, of course, with all other interested agencies. We feel that the learning curve that NOAA has established, and which has been alluded to earlier by their own witness, is too important to not take advantage of if there is to be another study.

Let me conclude now by turning to three particular features of this issue that are part of the legislation and about which I was asked to respond.

First the question of resin pellets, which sometimes find their way into the ocean. We have nearly completed a survey of resin companies within the SPI concerning current industry practices in containing resin pellets. For those not familiar with the term "resin," that is the raw material for most plastic products.

Analysis of preliminary results indicates that the problem of pellets escaping from resin manufacturing plants is one of the past. We are, though, examining other parts of the industry to make sure that safety practices in resin transportation to and from processing plants, as well as handling at the fabrication level, are sufficient to prevent fugitive resin pellets from entering the environment.

The second thing I would like to comment on is degradability. It is an often suggested solution, and it has been suggested already today, to deal with the marine debris problem.

We recognize that there is increased interest and perhaps increased opportunities for degradable plastics to be used for some applications. Certainly plastics are not inherently degradable. However, there has been research conducted over the past few years on the development of degradable plastics and with some limited success.

Mindful of this, we sponsored a symposium in June of this year. Dr. Andrady spoke at that symposium as well as academicians and people from industry throughout the country. The conclusions of that symposium were that while a lot of work is being done on degradable plastics, there are decided limitations.

One caveat, I think, that all speakers or most speakers had was that the performance of plastic products, including their safety requirements, should not be compromised by steps to make them degradable. In other words, you must consider why you are making the product out of the material and not just how you are going to dispose of it.

Finally, to conclude, I would like to comment on our efforts, our initial efforts on public education. A year ago, when this issue came to our attention and we first testified in the House of Representatives, we initiated a dialogue with the Center for Environmental Education to explore ways in which we could more constructively contribute to enhancing the public's understanding of how to dispose of plastics properly and how not to dispose of them.

The first step in this will be a public service advertisement campaign which we will perceive the results of before the end of the year. I would like to conclude by showing you these three ads that we have developed.

The first ad will be run in fishing industry publications. For those in the back who can't see, it shows a discarded fishing net, and it says: "This discarded net is done fishing, but it is not done killing."

The next campaign will focus on the commercial shipping industry, and there is a picture of a garbage bag and it says underneath, "When it's done holding your ship's garbage, it could hold death for some marine animals."

In both ads there is appropriate text to explain the headline and there will be backup materials.

The final ad is one aimed at our own industry. The picture of what looks like a tennis ball from a distance is actually a photograph of a resin pellet. The text underneath says: "A seabird could mistake this resin pellet for a fish egg and die."

We believe that this is a start toward what is the most important solution for the marine debris problem and that is public education, and we look forward to working with any and all interested parties on other projects such as this.

Thank you.

Senator **Mitchell**. Thank you, Mr. Freeman.

Dr. Andrady, welcome. We look forward to hearing from you.

STATEMENT OF DR. ANTHONY L. ANDRADY, RESEARCH TRIANGLE INSTITUTE, DIVISION OF CHEMISTRY AND LIFE SCIENCES

Dr. **Andrady**. Thank you, Mr. Chairman.

I am Tony Andrady, a research scientist with the Research Triangle Institute in North Carolina. The Research Triangle Institute is a non-profit research and development organization. I am pleased to appear before you today to discuss some of the technical issues associated with the plastic waste problem.

Mr. Chairman, at the very outset, I would like to emphasize that there is a general need for technical information relating to the issue, especially with regard to plastics in the marine environment.

In the absence of any significant amounts of research literature on the subject, even the basic questions relating to plastics in the oceans remain unanswered. This gap in knowledge needs to be addressed fairly quickly to understand the full implications of the various control measures proposed to curb plastic pollution of our seas.

The situation is somewhat better regarding land-based plastic waste. Even in this case there is room for improvement and several gray areas need to be completely resolved.

Despite its short history as a material, plastics very successfully compete with the traditional materials such as metal, wood and paper. Indeed, plastics have replaced them in many applications. It is the unique combination of strength, clarity, inertness, economy and durability of plastic materials that is responsible for its dramatic success. Plastics are widely accepted and truly outstanding materials that are almost irreplaceable in some applications. Public concerms of entanglement by and ingestion of plastic waste in the marine environment are basically caused by this material's exceptional durability.

Some ecologists have suggested increased use of conventional materials in place of plastics as a quick primary means of solving the waste problem. They incorrectly assume that the exceptional durability is a necessary price to pay for the convenience of plastic's many desirable properties.

Being a manmade material, plastics can be modified, within limits, to obtain desired properties, including reduced durability. Several such techniques for controlling outdoor lifetimes in plastics have been demonstrated and patented. Some have even been commercialized.

The well-known degradable six-pack rings utilize a rapidly photodegradable variation of the plastic that is used in the regular six-pack rings. On exposure to sunlight, the degradable material breaks down at an accelerated rate and is rendered brittle in approximately three to four months. Several such techniques have been developed and, at least in principle, these technologies can be extended to other types of common plastics.

Most plastics are practically non-biodegradable or resistant to degradation by micro-organisms. To render them truly biodegradable is both difficult and costly. However, several techniques have been patented to achieve comparable results.

Small amounts of a degradable material, such as starch, are blended with the plastic during processing and readily biodegraded in the environment. The voids created in the plastic weakens it and leads to brittle failure. Unlike the photo-degradable plastic, this technology has not as yet achieved full commercialization.

Neither the photo nor the biodegradable techniques has been fully demonstrated to perform under marine or aquatic conditions. Some of my preliminary experiments with the photo degradable six-pack ring material, however, suggests that this particular product is likely to perform well at sea, the rate of degradation being somewhat slower than that on land.

There is an urgent need not only to ensure that the use of these techniques will not affect the quality and the useful life of target products, but also to determine their appropriateness under marine conditions.

There is little doubt that the implementation of the MARPOL Annex V provisions will contribute to improved conditions at sea. Several bills recently introduced in the Senate will require studies to be conducted on plastic waste reduction. I think that the subject deserves and requires concerted study and research, and the bills are certainly a step in the right direction.

Mr. Chairman, I want to conclude my summary presentation by reiterating the versatility of plastics technology. As a scientist, I have often been amazed by the innovative vigor that has marked the phenomenal development of plastics.

Whenever the consumer demanded a specific property, such as strength, clarity, durability, the plastics industry and the research community always unerringly responded with a plastic which outperformed conventional materials in that particular property. Today, if the consumer demands plastics with limited lifetimes outdoors, I feel confident that the industry and science are resourceful enough to deliver the same.

Thank you.

Senator MITCHELL. Thank you, Doctor.

Senator Chafee.

Senator CHAFEE. Thank you, Mr, Chairman.

Mr. Davies, in your statement you answered several questions, but on page 7 of your testimony where you say, "Need to evaluate feasibility of alternative products; need to require, by regulation, use of degradable plastics," I didn't get your answer to that. It seems to me that you didn't answer it. Am I mistaken?

Mr. DAVIES. I may have slipped a page there. I thought I had answered it.

Senator CHAFEE. Could you briefly give us what your answer is, sort of summarize that, because I listened to you and before I knew it, we were into criminal penalties. I can't see that you gave much of an answer. Perhaps you say that consideration needs to be given to the residue.

You just raised some of the problems of what is going to happen if you get into the degradability, but you didn't seem to give much encouragement to the whole system of degradability. Am I mistaken?

Mr. DAVIES. No, we think that there is potential for degradable plastics for very specific uses. We have to define those uses. Our concern, of course, is that the daughter products of the degradation products not be toxic and that that be fully investigated, and that the degradable products themselves, which are often incinerated or disposed, do not have significant adverse effects in the environment.

Senator CHAFEE. Mr. Freeman, first, I would like to commend the Society of the Plastics Industry. You and I have talked before, and I have had the opportunity to appear before your organization.

As the Chairman well knows, we have a host of groups who appear before us, usually fighting tooth and nail anything that might force the industry to move along in a certain direction. But I think that the response of the plastics industry to this problem in attempting to do something about it is good.

Give me a prediction. You have a lot of support and thought given to this matter, what are the chances?

I guess it was you who said when you are producing a product, you have to look at why you are producing the product. You are producing a coke bottle, or you are producing a wrapper, and you want it strong, clear, and flexible, or whatever it might be, and don't give thought to trying to dispose of this in the end. But we have a problem here.

As Dr. Andrady and the other statistics have shown the increase in the use of plastics is absolutely phenomenal in this country. It is clearly not going to reverse. Just as I mentioned the cranapple coming now in a plastic container. Once upon a time, it was Clorox bottles that we were always talking about finding 3300 miles at sea. Now it is going to be every kind of possible bottle, whether it is a ginger ale bottle, coke bottle, you name it.

What are we going to do? What are the possibilities of doing something about this?

It is not solely, as I mentioned, a marine problem, it is a land disposal problem, too.

Mr. **Freeman**. First, let me comment on a comment you made. In asking the question, you suggested that perhaps we think you don't have to think about how a product is disposed of when you are designing it. I didn't mean to imply that.

What I did mean to say is that you have to also always look at what the intended use of the product is. I don't think that we should mandate products to be designed and the first and only criteria being how we are going to dispose of them if it is going to compromise the performance of the product.

Secondly, there well may be, as there are already, some applications for which degradable plastics would be suitable. But degradability is not the only way to dispose of products. In fact, it is not the principal way to dispose of products. In fact, I hope it would never become 50, because that could mean that we would be disposing or that we would have more litter.

We think that the greater use of—talking about all wastes—and dependency upon recycling, and greater use of waste energy incineration is ultimately the answer to the nation's solid waste problems, and not just for plastics. As an industry, we are working hard to both develop more recyclable plastics.

Senator **Chafee**. Can you give me an example of something that might be recyclable? A coke bottle?

Mr. **Freeman**. Yes, sir.

Senator **Chafee**. A ginger ale bottle?

Mr. **Freeman**. Yes, sir. The polyethylene terephthalate, which is the resins used to make that product, can be recycled, and is being recycled. We would hope that it would continue to be recycled by an ever increasing percentage.

Senator CHAFEE. In the States that you leave a 5 cents deposit on a coke bottle or a ginger ale bottle, and then when you turn it in, you get your 5 cents back. What happens to the bottle?

Mr. FREEMAN. A recycler purchases that and processes it, and sells it. There are several companies in the business, the largest being Wellman's, located in South Carolina. There are several other smaller ones who buy those bottles and process them into other kinds of plastic products.

Right now a primary use, not the only use but a primary use of recycle PET bottles is fiberfill, but there is a great deal of exciting research going on to create other kinds of products through other processing techniques. Some of this work is being done at the Plastics Institute at Rutgers University in New Jersey, but a lot of work is being done elsewhere in the world as well as the United States.

Senator CHAFEE. I think that one of the other areas is incineration. I know that there is a whole variety of types of plastic. But the normal type of plastic, if there is such a thing, the average plastic, when you burn it, what happens?

Mr. FREEMAN. Let me ask my technical colleague, Mr. Toner, to respond.

Mr. TONER. The normal plastics in municipal solid wastes are plastics that are based almost entirely on carbon and hydrogen and they burn like any other normal combustible waste product.

There are some plastics that are chlorinated and there have been allegations that when you burn chlorinated plastics, you contribute to dioxin formation. A recent study sponsored by the New York State Energy Research and Development Association at an operating incinerator in Massachusetts has, if you will, debunked that idea. They found no evidence that increased loadings of chlorinated plastics in the municipal solid waste feed increased at all the dioxin effluent from the incineration plants.

So in our view, incineration is a perfectly environmentally acceptable way to dispose of plastics, and you regain the energy from their petroleum base, so it is a benefit.

Senator CHAFEE. Dr. Andrady, the eleven states that have adopted the so-called degradable six-pack holder, what is it anyway? Does it degrade, and in how long, and what does it mean, degradable?

Dr. ANDRADY. These six-pack holders are photo-degradable. The polyethylene resins that are used in the fabrication of these products have been slightly changed so that they degrade more rapidly than the regular plastic.

Senator CHAFEE. More rapidly than something that hardly ever degrades isn't very fast. Suppose you left it out in the sun on the beach, how long?

Dr. ANDRADY. The current product would degrade in about three to four months. Degrade in this sense means that it would become brittle so that if an animal is entangled in this product after three to four months, then there would be no damage done, the animal would be able to disentangle itself.

Mr. TONER. Excuse me, if I may, Senator, I happen to have one here. This has been exposed for two weeks outdoors in mid-summer in Chicago, and it took that little effort to break the loop. I think that the primary concern with the loop connector is that of entanglement.

Senator **Chafee**. I think that it is litter, too.

Mr. **Toner**. It is also little.

Senator **Chafee**. I just want to say this. I had a hearing on this matter in my home state, and I think trying to document that the plastics do significant damage to wildlife is pretty tough. You see examples of the bird with his neck through the six-pack holder, but how extensive is hard to document.

So I don't think that we want to go on this solely on the basis of the damage to wildlife, although that is a factor. Just as we have litter laws, and we are concerned with what our landscape looks like, so we are concerned about what our beaches look like and what the ocean looks like.

There are all kinds of things that have come up in the fishnets, but I think in addition to all that there is an aesthetic concern that none of us want to brush aside. When we go to some remote cove to relax and restore our spirits, we just don't want it to look like a trash heap.

This isn't elitist, this applies to everybody across-the-board. There is still a concern even when we get a six-pack holder that a bird can break out of, the thing still continues to float around, so we haven't really totally solved our problem.

Mr. **Toner**. The degradation will continue, Senator, where it will lose all of its physical strength and just the action of nature, the wind and abrasion, will break it up into increasingly smaller pieces. While it never disappears, it just becomes more and more benign and it will reduce the litter aesthetic problem in that sense.

Senator **Chafee**. Thank you.

Thank you, Mr. Chairman.

Senator **Mitchell**. Thank you, Senator Chafee.

Gentlemen, thank you very much for your testimony. It will be very helpful to the subcommittee as we consider the legislation proposed by Senators Chafee and Lautenberg.

This concludes the hearing.

[Whereupon, at 12:35 p.m., the subcommittee adjourned.]

[Statements submitted for the record and the bills S. 559, S. 560, and S. 633 follow:]

TESTIMONY FOR THE 17 SEPTEMBER 1987 HEARING OF THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION FOR THE U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

Submitted by
Professor Dana R. Kester
Graduate School of Oceanography
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Mr. Chairman, members of the Senate, thank you for this opportunity to express my views on the problems associated with plastics in the marine environment, being addressed by legislation in S. 559, S. 560--as amended, and S. 633. During the past ten years I have been engaged in research and education related to waste disposal in the ocean and to applying our knowledge of marine processes to the protection and management of the marine ecosystem and its resources. The pending legislation offers significant provisions to reduce the discharge of plastics to the marine environment. My comments this morning will address a number of points: (1) types of plastics found in the marine environment, (2) the sources of this material, (3) the effects of plastics in the marine environment, (4) possible remedies to the problem of plastics entering the marine environment, (5) recommendations related to the specific legislation being considered, and (6) the relationship of plastic pollution to the general issue of waste management and the ocean.

Types of Plastics Found in the Marine Environment

In a study published by J.A. van Franeker (Marine Pollution Bulletin, Volume 16, Number 9, Pages 367-369, 1985) the types of plastics found in the marine environment were identified as (a) raw plastic particles about 4 millimeters in size shaped as pellets, disks, and spheres which are used upon remelting with additives for the manufacture of a large variety of plastic products, (b) pieces and fragments of plastic sheet, foamed material, and molded items, and (c) pieces of thread, filament and netting. Until fairly recently the occurrence of plastics along our shoreline and associated with sea birds, fish, and marine mammals was considered to be an aesthetic nuisance without substantial impact on the marine ecosystem. However, the wide range of materials and their broad distribution in the ocean suggests that a significant problem exists requiring attention.

Sources of Plastics to the Ocean

The types of plastics found in the ocean indicate a variety of sources from human activity. Some material results from the careless disposal of plastic items along the shoreline. Garbage dumped from ships contains a substantial amount of plastics and is often bagged in plastic. Synthetic monofilament line and fishing nets are lost or discarded at sea. Plastic litter enters the ocean from coastal discharges and runoff. It is believed that plastic particles are released or lost from manufacturing facilities in coastal regions or during transportation. The U.S. Environmental Protection Agency does not permit the ocean dumping of domestic garbage; thus regulated ocean dumping is not a source of plastics.

A recent assessment of the sources and amounts of plastics entering the marine environment was provided by A.T. Pruter (Marine Pollution Bulletin, Volume 18, Number 6B, 1987, Pages 305-310). It has been difficult to quantify the amount of plastics entering the ocean. On a mass basis plastics are often a small proportion of the total solid wastes discharged at sea when compared with paper, metal, and glass wastes. This comparison, however, is affected by the large difference in mass density of these different types of materials. Due to the difficulty of quantifying plastic wastes in terms of their mass relative to other wastes, it is common to report observations in terms of the number of plastic artifacts found in the marine environment. It is evident that there is increasing use of plastics for containers, packaging, synthetic line, and fishing nets, as well as for a host of disposable products. About 7% of the residential and commercial solid waste generated in New York City is plastic, and an estimate of 12% of the solid waste in Rhode Island is plastic (R. Bendick, R.I. Department of Environmental Management). Plastics are clearly a significant part of the solid waste stream.

Fate and Effects of Plastics in the Marine Environment

The problem of plastics in the ocean is due to their persistence and accumulation in surface waters and along the coastline. One of the major principles that has emerged from chemical studies in the ocean is that the marine ecosystem is sustained by geochemical cycles. Chemical constituents enter the oceans and are cycled and recycled through the water column and to the seafloor. Most plastics do not participate in these cycles; they enter the ocean and accumulate. As we continue to discard plastic material in the ocean it will become a more and more prevalent form of litter in the waters, shorelines, and sediments.

Contamination of the ocean by plastics is not a localized problem, it is a global phenomenon. Observations of plastic items have been found throughout the world and in seemingly remote regions. The global distribution of plastics in the marine environment is a warning sign that there could be important effects in the ecosystem.

Many of the biological effects of plastics in the marine environment were summarized by D.W. Laist (Marine Pollution Bulletin, Volume 18, Number 6B, 1987, Pages 319-326). The types of marine life that have been affected by plastics include marine mammals, seabirds, turtles, fish, and crustaceans. The effects are mainly mechanical rather than toxicological; animals become tangled in plastic line and nets, ingestion of plastic debris reduces their ability to assimilate food. C.W. Fowler (Marine Pollution Bulletin, Volume 18, Number 6B, 1987, Pages 326-335) presented an argument indicating that the nearly 50% decline in a North Pacific fur seal population from 1955 to 1985 correlated with increased observations of seals entangled in fishing net debris.

In addition to the specific studies already cited, the special issue of Marine Pollution Bulletin published in June 1987 and edited by D.A. Wolfe contains many recent examples of the impacts of plastics on marine animals including seals, birds, and turtles. There are increasing indications that plastic artifacts in the ocean are not only harmful to individual organisms, but they may also be affecting populations of some species.

Remedies for the Problem of Plastics in the Ocean

We need greater control over the disposal of plastic material to prevent its entry to the marine environment. For products that are designed to be disposable, steps should be taken to utilize degradable materials rather than persistent plastics. The ultimate fate and degradation products of plastics need to be determined as well as their rate of degradation. It is insufficient for physical degradation to merely transform plastic material into small particles and fragments. Consideration needs to be given to the biological effects of the chemical products of plastic degradation. The ideal plastic for disposable use would be a material that is initially broken down by a process such as hydrolysis or photochemical reactions into substances that can be oxidized to inorganic forms (carbon dioxide and water) by naturally occurring microorganisms.

The problem of fishing gear lost or discarded in the ocean is difficult to address. There are many benefits to synthetic fishing gear such as reduced weight and greater durability when compared to natural materials. Making fishing gear from plastics that are designed to self-destruct would not be useful. The release of fishing gear in the marine environment should be minimized by publicizing the harmful effects of net debris and if necessary by registering nets with a traceable identification and establishing penalties against improper disposal.

Recommendations Related to Pending Legislation

1. The United States should implement Annex V of the 1978 Protocol to the International Convention for the Prevention of Pollution from Ships, 1973. Annex V prohibits "the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags".

2. Because of the widespread occurrence of plastics in the marine environment I recommend that the provisions in S. 560, Section 2 (b) and (c) that specify activity within 25, 12, and 3 nautical miles of the nearest land be changed to apply to the U.S. Exclusive Economic Zone. Our knowledge of transport processes in the marine environment and the results of biological effects of plastics in the ocean do not support the notion that impacts are diminished or acceptable if they occur beyond certain distances from land.

3. I would like to endorse the passage of S. 559 because it will lead to the minimization of persistent plastics input to the marine environment. I believe that the six-month period for the Plastic

Pollution Reduction Study specified in S. 633, Section 107, is too short to meet the objectives for this study; a period of 12 to 18 months would produce a more comprehensive examination of the problem and possible solutions.

Plastic Pollution and Waste Management

This hearing and the pending legislation addresses one aspect of plastic pollution in the marine environment, specifically that which results from maritime sources. However, there are more general issues which will need to be examined in order to eliminate the detrimental effects of plastics in the environment. If raw plastic particles are entering the environment from manufacturing and transport facilities, steps should be taken to eliminate these sources.

Fifty years from now when our grandchildren look back to the closing years of the 20th century, they will find it inconceivable that we consumed the earth's petroleum resources by combustion and by filling pits in the ground with plastic containers and packaging materials. We need to substitute the use of paper and glass for plastics in packaging where possible.

When a plastic product is no longer useful it should be available for recycling. When recycling is not feasible, the plastic should be incinerated under conditions of complete combustion to avoid formation of harmful products such as dioxins. While landfills are appropriate disposal sites for biodegradable wastes, they should not be used as repositories of aluminum, glass, and plastic wastes. We need to continually evaluate our use of resources and our generation of wastes in terms of complete cycles.

The widespread occurrence of plastic wastes in the marine environment is further evidence of the finite limits of the global ecosystem, and the ability of human activity to overwhelm those limits.

TESTIMONY OF
JAMES E. DOUGLAS, JR.
ACTING DEPUTY ASSISTANT ADMINISTRATOR FOR FISHERIES
NATIONAL MARINE FISHERIES SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U. S. DEPARTMENT OF COMMERCE

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

SEPTEMBER 17, 1987

Mr. Chairman and Members of the Subcommittee:

My name is James E. Douglas, Jr. I am the Acting Deputy Assistant Administrator for Fisheries of the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce. Accompanying me is Mr. James Coe, Program Manager for NOAA's Marine Entanglement Research Program (MERP) at our Northwest and Alaska Fisheries Center in Seattle, Washington.

I appreciate the opportunity to appear before you today to present the Department's views and actions on the problem of plastic pollution in the oceans.

I will begin by providing NOAA's views on S. 559, S. 560 as amended, and S. 633.

S. 559 - "PLASTIC WASTE REDUCTION AND DISPOSAL ACT OF 1987."

Title I, entitled " Study of Plastic Pollution," requires the Administrator of the Environmental Protection Agency (EPA) to undertake six studies of potential actions to control marine debris and to make recommendations to Congress on the implementation of these actions. In principle, NOAA supports the intent of this title but is opposed to its enactment on the grounds that much of what it requires is already being undertaken. In response to an April 2 letter to the President signed by thirty Senators, a high-level interagency task force, chaired by NOAA, was established under the Domestic Policy Council's (DPC) Work Group on Energy, Natural Resources and the Environment. The charge to this ten-agency task force is to 1) assess the marine debris problem and the need for research, 2) identify potential reduction measures and, 3) consider alternative actions to address the problem of plastic marine pollution. The task force is to report to the DPC within six to nine months. A work plan for the development of this report, setting up a task leader and identifying information and resource needs, has been approved. The task leader and a deputy have been appointed and the supporting roles of the agencies have been settled. The work plan specifically includes legal and regulatory analyses, studies of incentive and bounty systems for derelict fishing gear and further evaluation of the uses of degradable plastics. The need to study the feasibility of product labeling, Federal procurement policy, and education in reducing marine debris can be considered in the report to the DPC.

Title II - Regulation to Control Plastic Pollution. NOAA agrees with the general purpose of this title, to reduce the hazard posed to wildlife by discarded plastic loop connectors (e.g., six-pack rings) and notes that 11 states currently have similar laws. This title does not recognize other, possibly more suitable, options for reducing the presence of these connectors in the environment such as deposit incentives, labeling, recycling and education.

S. 560, AS AMENDED - TO IMPLEMENT THE PROVISIONS OF ANNEX V TO MARPOL

NOAA has previously deferred to the Coast Guard to outline the Administration's requirements with respect to the legislation needed to implement Annex V to MARPOL. Since S. 560 as amended is identical to the legislative proposal prepared by the Coast Guard and submitted by the Administration to the Senate for consideration, NOAA would support enactment of this legislation.

S. 633 - PLASTIC POLLUTION CONTROL ACT OF 1987

With the exception of Sections 107 and 108 subtitled "Plastic Pollution Reduction Study" and "Plastic Pollution Public Awareness Program", respectively, S. 633 is a bill to implement Annex V to MARPOL. Since the Administration prefers the approach outlined in S. 560 as amended, NOAA cannot support enactment of this legislation. Section 107 requires a 6-month study to evaluate a number of plastic pollution control options. These are similar enough to those specified in Title I of S. 559 that my comments on that Title are appropriate here. Basically, the report being prepared for the Domestic Policy Council Working Group by the Federal interagency task force on marine debris will address these studies.

Section 108, which requires EPA, NOAA and the Department of the Interior (DOI) to conduct a broad public education program to make known the consequences of debris in the marine environment and the penalties for violations of S. 633, is unecessary for the following reasons: NOAA has been conducting industrial education programs on this subject since 1985. Some of the materials produced in this program have been used by other individuals and organizations to inform the public. NOAA supports public education efforts and will be happy to cooperate with other agencies in the development of these programs.

Through NOAA, the Department of Commerce is involved in a number of efforts to address the problems related to pollution in the oceans. In addition to working with other Federal agencies, NOAA is working with various universities, State governments, industrial, educational and recreational associations and environmental groups. Our efforts are international in scope. Let me point out some of these efforts and our findings to date.

NOAA EFFORTS

In response to the growing problem of marine plastic pollution, and with the urging of Congress, NOAA established a Marine Entanglement Research Program in 1985. The goals and objectives of this program were developed from recommendations that came out of the International Workshop on the Fate and Impacts of Marine Debris held in Honolulu, Hawaii, in

November 1984. Our program addresses four broad activities: (1) sources of plastics (containers, bags, pellets, fishing gear, cargo straps, six-pack yokes, bait bags, etc.), that are found in the oceans and along our coasts; (2) mortality to wildlife caused by plastics in the marine environment; (3) educating the public about the plastic pollution problem; and (4) practical means for the reduction of plastics in the oceans, such as, waste management systems (incineration, recycling, and compaction) and photodegradation and biodegradation technology. In FY 1985, Congress provided $1 million for this program. For fiscal years 1986 and 1987, the appropriation from Congress was $750,000.

SOURCES OF PLASTICS

The marine pollution literature identified sources of plastics in the oceans as vessel-generated refuse, waterborne municipal and industrial wastes, and terrestrial litter transported by river systems. The types of debris from these sources and the mechanisms of their biological, economic and esthetic impacts are generally known. The amounts and specific sources of each debris type and the exact degree of their impact(s) are not known.

NOAA recognizes the emerging need to control the sources of plastic debris entering the marine environment. Current strategies for reducing plastic pollution include or imply changes in individual or institutional behaviors and the development and implementation of new or modified processes and technologies for

1) waste management, 2) transportation systems, 3) alternate materials applications and, 4) equipment management and control systems. Further, the role of government in these actions is evolving. Legal reviews and analyses by each effected agency will be needed to determine agency obligations and responsibilities. Legal analyses may also be necessary to establish ownership and responsibility for debris items under a wide range of circumstances. Information on the sources and amounts and impacts of specific components of the marine debris aggregation will enable a better allocation of limited resources to these action areas.

Certainly, the most prevalent debris on the ocean surface the world over, is the particulate remains of manufactured plastic items. All plastic materials free in the environment are eroded into smaller particles which are carried by water to either the ocean or freshwater basins. A recent study in the Central North Pacific found that these nondescript plastic fragments accounted for as much as 91 percent of the floating debris which averaged almost 50,000 pieces per square kilometer.

Lost and discarded fishing gear is another important component of plastic debris because of the potential hazard it poses for wildlife. In addition to the effect on wildlife, fishermen suffer when rope or derelict fish nets entangle propellers and drive shafts. Added to the increased risk to navigation, these situations cause economic loss to the vessel and loss of fishing time. Estimates for the world-wide loss of plastic fishing gear range as high as 135,000 metric tons per year. Surveys of litter on the remote beaches throughout the Pacific show high densities of lost commercial fishing gear. Beach surveys at Amchitka Island in the Western Aleutians show about six out of seven items were fishing gear and two-thirds of the total items were trawl web fragments. Similar beach surveys in Southeast Alaska and voluntary clean-ups all over the country, however, indicate a much lower ratio of fishing gear to other refuse. Fishermen are recognizing their role in this problem and are beginning to help solve it. They hope that others who are part of the problem will join in the solution.

IMPACTS ON THE MARINE ENVIRONMENT

The impacts can be classified as biological, aesthetic, and economic. The persistent and buoyant nature of these materials causes them to remain in the marine environment for extended periods of time. As a result, they pose a threat to marine mammals, turtles, seabirds, fish, and other living marine resources. Individual animals can become entangled in drifting nets or other debris, or they can ingest some of the materials. Animals which are entangled can drown, incur wounds or injuries, or lose their ability to avoid predators or to catch food. Animals which ingest synthetic debris suffer reduced digestive efficiency and possibly blocked digestive tracts.

Synthetic debris may be a factor in the decline of several species including the northern fur seal, steller sea lion, Hawaiian monk seal, and certain sea turtles and seabird populations. Because many of these species live a large part of their lives at sea, most evidence of the impact comes from strandings and other chance encounters. It is difficult to draw precise conclusions about the effects of plastic pollution on fish and wildlife populations. However, there is no doubt that many marine mammals are killed by becoming entangled in nets and other synthetic debris. The role of entanglement in the population dynamics of these animals is under continuing investigation.

Both entanglement in and ingestion of plastic debris are documented causes of death and debilitation for sea turtles and seabirds. All species of sea turtles are classified as either threatened or endangered, under the Endangered Species Act, so there is legitimate concern over the role of plastic debris in their life history and population trends. Ingestion of plastic is also common among surface feeding and diving seabirds.

The economic impacts caused by persistent marine debris are poorly understood. It is generally known that the tourist industry and vessel operators, including fishermen, suffer measurable economic loss due to the presence of, and interaction with, marine debris. Vessel damage and disablement, ghost fishing and tourist avoidance of fouled beaches represent some of the types of losses sustained by these industries. The cost of shoreline clean-ups also contribute to this economic loss.

NOAA's evaluations of specific economic loss due to marine debris have been in the area of ghost fishing impacts. For example, a NOAA-sponsored study in New England estimated that in 1976, $2.48 million ex-vessel value of lobster were killed via ghost fishing pots. Estimated pot loss rates in most fisheries run from about 10% in Alaskan king crab fisheries to 20-30% in the New England lobster fishery to as high as 40% per year in the Hawaiian spiny lobster fishery. The mortality rates associated with ghost fishing pots and traps varies greatly among species and trap designs.

Aesthetic degradation of the seashore has become a concern to many Americans. The longstanding anti-litter campaign in the United States gives testimony to the fact that the public is concerned about the appearance of their beaches, not to mention the lost revenue from reduced tourism. That virtually every coastal State is involved in massive voluntary beach clean-ups attests to the public's commitment to a cleaner environment. As part of a major voluntary public campaign to promote appreciation of our coasts, Coast Week will be celebrated between September 19 and October 10 in every coastal State in the Nation. Massive public beach clean-ups are part of this activity. Only the State of Oregon held a Statewide beach clean-up in 1984. Thus there has been a dramatic rise in the public concern about marine debris.

Current quantification of the impacts of many marine pollutants, including plastics, do not permit more than a qualitative or value judgement regarding the relative importance to society of marine pollution problems. NOAA's National Marine Pollution Program Office (NMPPO) is in the process of updating the National Marine Pollution Program Plan (Plan) as required by P.L. 95-273, the National Ocean Pollution Research and Development and Monitoring Act, in which the procedures to determine ocean pollution research priorities are established. NMPPO recently held a workshop to address several specific areas of concern regarding ocean pollution, and followed up with a workshop on persistent marine debris. The second workshop attempted to gather information on the extent of the problem, but did not explore research priorities outside of the plastic pollution problem. The workshops results will be taken into account in developing the Plan, which is to be completed in September 1988, and which should include discussions and information of assistance in drawing conclusions on the relative importance of the major marine pollutants. NOAA's statutory responsibilities influence the level of effort directed toward certain marine pollution issues. Because of the impacts on marine mammals and endangered or threatened species, NOAA is concerned about persistent marine debris.

PUBLIC EDUCATION

There is a solid consensus among scientists, fishery and wildlife managers, and environmental interests that education will play a primary role in controlling plastic pollution. NOAA believes that public education efforts on the impacts of plastics on wildlife and the environment, and on the options for reducing those impacts will play a major role in controlling the sources of marine pollution.

Education will provide the inclination to comply with new laws because the public will understand their purpose. The linkage of the ocean litter problem with the long recognized and partially ignored terrestrial litter problem may finally awaken many previously unconcerned citizens. This issue has great appeal to the public as noted by the nationwide voluntary clean-ups and industry sponsored education programs. NOAA believes that education programs logically compliment any current and future regulatory and enforcement actions. This is especially true in the case of marine debris since many sources will be difficult to police.

Under the Marine Entanglement Research Program, NOAA initially developed an education program concentrating on the industrial sources of debris in the North Pacific Ocean. This educational program has now been expanded to the East Coast and Gulf of Mexico. We are looking forward to the same level of cooperation and leadership from the industries of these regions as we have had in the North Pacific. New information generated by the Entanglement Program is continually being incorporated into the education presentations.

REDUCTION OF PLASTICS

The use of suitably degradable plastic resins in certain products would reduce the adverse effects on the marine environment. Theoretically, controlled lifetime plastic resins could reduce the threat to wildlife from some of the most hazardous forms of debris types, such as ropes, nets, and plastic bags, that are the least amenable to other forms of control. Similarly, the presence of certain disposable products commonly littering the shorelines might be reduced by substituting controlled lifetime plastics. The extent of this reduction depends on a number of variables, such as the degree of chemical or physical control that is achieved over the degradation process, the point in the item's lifetime that it enters the marine environment, the exposure history of the product and its location. The technology to produce and process these resins is in its infancy. Problems in formulation and processing need to be identified and solved prior to their general use. In addition, each proposed use of a controlled lifetime plastic alternative must be evaluated in the context of other actions such as recycling, reuse, and heat recovery. NOAA is currently working in cooperation with the U.S. Navy to further evaluate the degradable plastic alternatives.

Late last year, the Marine Entanglement Research Program initiated the first meeting of the Marine Debris Roundtable, an informal, national discussion group focusing on solutions to the marine debris problem. Representatives of involved government agencies and industry participated. Industry representatives included the fishing industry, port authorities, merchant shipping, the waste management industry, and the plastic industry. Two major events discussed at this meeting are now certainties.

First, an international fishing industry symposium on the marine debris problem and its potential solutions will be sponsored in October 1987 by a coalition of North Pacific rim fishing associations from the United States, Japan, the Republic of Korea, Canada, the U.S.S.R., and possibly Taiwan and the Peoples Republic of China. Secondly, in June 1987, the Society of the Plastics Industry sponsored a national symposium in Washington, D.C. on the research, development, and marketing of controlled lifetime plastics (degradable plastics).

Also, in June 1987, the Society of the Plastics Industry sponsored the second meeting in Washington, D.C. of the Marine Debris Roundtable. Discussions focused on implementation issues related to the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V and the relationships between debris impacts research and plastics technology.

INTERNATIONAL AWARENESS

In 1986, as part of our North Pacific education program presentations were made in Japan, the Republic of Korea and Taiwan on the proliferation of plastic pollution. These presentations were made at the invitation of those governments. We consider these invitations a sign of genuine concern regarding the proliferation of plastic pollution. Japan and Korea already have domestic laws and programs focused on marine debris, including land as well as vessel generated sources. Both countries also have commercial recycling programs in place to accept waste fishing gear.

Further demonstrations of the awareness of these governments of this issue are evident in cooperative research programs and in the negotiations for the placement of U.S. observers aboard foreign commercial squid fishing vessels. Because the high seas squid driftnet fisheries have been in existence only a few years, insufficient data have been available to assess their overall impact upon the marine environment. To address this situation, NOAA's National Marine Fisheries Service (NMFS) took the initiative during the 1986 fishing season to work cooperatively with other nations to obtain data on these fisheries. We were successful in placing NMFS scientists aboard a Japanese commercial squid driftnet vessel, and high seas squid research vessels from Taiwan, Canada, and the Republic of Korea. For the 1987 squid fishing season, we have placed scientists aboard Canadian, Japanese, Taiwanese and Korean driftnet fisheries research vessels in the squid fishing area. The NOAA research vessel Miller Freeman will conduct research in this area in October and November. In addition, we are working with the Government of Japan to expand data collection efforts from commercial Japanese squid driftnet vessels during the next three years. We believe that the data collected through cooperative efforts will assist NOAA in evaluating the impacts of the high seas driftnet fishing on the living marine resources of the North Pacific Ocean.

FUTURE EFFORTS

Under the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and the Magnuson Fishery Conservation and

Management Act, NOAA is charged with protecting, conserving and managing a wide range of marine species. Our Marine Entanglement Research Program, with broad advice and consultation from other agencies and the environmental community, has developed priority research tasks to address the role of plastic pollution on those species in our charge that appear to be at risk. We see a continuing need to quantify the effects on fish stocks and threatened or endangered species from those plastic products.

For many of these species the research and monitoring methods are still under development. Offshore species in particular require extended observation programs because of the low frequency with which they are encountered. NOAA's program is primarily concerned with endangered, threatened and depleted marine species, e.g. Hawaiian monk seals, sea turtles, and northern fur seals. The need to make these evaluations is statutory under MMPA and ESA.

NOAA has made a conscious decision not to use the Entanglement Program funds to quantify the input of plastic debris into the oceans. However, the durability of most plastics, the increasing annual production of plastic resins, and the absence of new systems for refuse management lead us to believe that plastic pollution can only be increasing. In lieu of measuring plastic input to ocean regions, we have developed methods for monitoring ocean debris through beach surveys.

NOAA is funding studies directed towards reducing the amount of nondegradable material that is disposed of or lost at sea.

Photo- and biodegradation technology, incineration, compaction, sorting, and provisioning and recycling systems are all applicable in helping to control vessel-source plastic pollution. We will be pleased to work with other agencies to address these concerns as the scope of technology for controlling plastic pollution broadens.

NOAA is also looking at the problem of adequate reception facilities at ports. Vessels that choose to retain their nondegradable refuse must have a suitable place to unload it. Preferably, this would be a place where refuse can be disposed in such a way that it can never re-enter the ocean environment.

In anticipation of the U.S. ratification of Annex V to MARPOL, NOAA has entered into a cooperative agreement with the Port of Newport, Oregon, to develop a prototype waste management system to receive vessel generated refuse. The results of this experience are expected to help other ports, large and small, deal effectively with the ANNEX V requirement that ports provide this service. We point out that the fishing industry lands its catch in many small ports. In many of these ports, there may be no public dock and facilities - only private facilities of the buyer. We will be looking at the remote ports problem through a grant to the State of Alaska starting next month.

MARPOL ANNEX V

NOAA fully supports the U.S. ratification of Annex V to MARPOL as a rational step in the global management of plastics in the oceans. NOAA endorses the Administration's proposal for implementing Annex V and expects to work with the Coast Guard to ensure equitable and appropriate solutions particularly as they relate to coastal and maritime industries.

The International Maritime Organization, through its Marine Environment Protection Committee (MEPC), is addressing the issue of plastic pollution and entanglement. NOAA is represented on the U.S. Delegation which presented a working paper on the implementation of Annex V to the working group on optional annexes to MARPOL at the most recent meeting in February 1987. The working group requested that the United States prepare draft proposed guidelines for the implementation of Annex V for presentation at the next MEPC meeting in December 1987. These guidelines will describe means for reducing the type of garbage and trash which must be disposed of by (1) modifying the types of materials taken on board, (2) more effective means of handling such materials taken on board, and (3) more effective means of disposal of such materials on vessels. The guidelines will also suggest methods by which countries can improve public knowledge of the problems caused by marine garbage and trash. NOAA has the lead on drafting these guidelines and is coordinating its efforts closely with the U.S. Coast Guard, Environmental Protection Agency, Department of State, Marine Mammal Commission, and other interested organizations.

This concludes my testimony. I am ready to answer any questions you may have.

Testimony of

ROGER E. MCMANUS
CENTER FOR ENVIRONMENTAL EDUCATION

Before the U.S. Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
Subcommittee on Environmental Protection

Hearing on Control of Pollution from Plastic Waste
S. 559, S. 560 (as amended), and S. 633
Sept. 17, 1987

TESTIMONY OF THE CENTER FOR ENVIRONMENTAL EDUCATION

Before the U.S. Senate
Committee on Environment and Public Works
Subcommittee on Environmental Protection

Hearing on PLASTIC POLLUTION

My name is Roger E. McManus. I am testifying as president of the Center for Environmental Education (CEE), a private, non-profit marine conservation organization, and on behalf of its 100,000 members. CEE has for many years been concerned about the effects of man's activities in ocean environments. CEE conducts a variety of programs concerning endangered and threatened marine species and their habitats, nonrenewable and renewable marine resources, and marine pollution. For the past five years the Center has focused attention on documenting the harmful effects of plastic debris in the marine environment, entanglement of marine species in ocean debris, and incidental take of nontarget species in active fisheries.

We have been asked by the Committee to lay out our findings on the particular problems plastic pollution causes in the marine environment, and to comment on several proposed alternatives to solving those problems. My comments on our documentation of the occurrance of marine debris, entanglement and incidental take are drawn from several published reports which have been provided to you along with copies of this testimony.

Plastics in the Ocean: More than a Litter Problem

Man has for centuries used the ocean as a means of transportation, a producer of food, a source of mineral wealth. Unfortunately, man has also used the world's oceans as a receptacle for all types of garbage. For years we never saw the problem--metal and glass sank, paper and cloth decayed. But now, more and more manufactured objects are made of plastic--a material renowned for its light weight, strength, and durabilty. Today the effect of dumping plastics into the ocean has become an all too visible problem.

While the U.S. plastics industry has been in existence for over a century, the commercial development of today's major plastic materials occurred during World War II when shortages of rubber and other materials brought plastics into great demand. By 1960, approximately 6.3 billion pounds of plastic resin were produced in the United States. Present plastics production has increased to nearly 50 **billion pounds** per year.

Even more notable is the growth of plastic's applications. The convenience of plastic for consumer products and packaging is demonstrated by the fact that in 1984, the U.S. produced more than 17 billion plastic bottles and turned out nearly 1 billion pounds of plastic trash bags. Lightweight plastic has enabled fishermen to use nets that may extend over 20 miles in length and traps that are easy to handle and require little maintenance.

Its strength has made plastic an ideal substitute for other materials used in packaging heavy cargo. For instance, plastic is rapidly replacing steel in the manufacture of strapping bands used to bind crates. In 1984, some 300 million pounds of plastic were used in shipping sacks and pallet shrink wrap. Above all, plastics are durable. A simple plastic six pack ring used for carrying beverages has an estimated life span of 450 years.

Major markets for plastic goods include transportation, packaging, construction, electrical and electronics, furniture and furnishings, consumer and institutional supplies, industry and machinery. In essence, plastics have been incorporated into virtually every industrial and commercial sector of America.

What happens to plastic goods when their useful life is over?

It's a common practice for oceangoing vessels to throw their wastes overboard while at sea. According to a National Academy of Sciences estimate made over decade ago, oceangoing vessels discard 14 billion pounds of cargo and crew wastes, including plastics, every year. Added to this amount is litter disposed of on land, and eventually washed into aquatic areas via rivers, sewer systems, landfills and other sources. But while some litter sinks or rapidly decays, plastics dumped into the ocean simply accumulate--in fact, plastics are now the most common man-made objects sighted at sea.

Where are these plastic wastes coming from?

- The world's merchant shipping fleet discards at least 450,000 plastic containers, in addition to 4,800,000 metal, and 300,000 glass containers into the sea every day.
- Merchant ships dump into the oceans more than 12.4 billion pounds of cargo wastes, including plastic sheeting and strapping bands, every year.
- The world's commercial fishing fleets jettison more than 50 million pounds of plastic packaging and millions of pounds of plastic fishing gear including nets, rope and buoys every year.
- Recreational and sport fishing vessels discard more than 100 thousand pounds of plastic bottles, bags and other garbage into U.S. coastal waters each year.
- In the metropolitan Northeast, sewer systems combined with stormwater runoff systems overflow when their capacity is exceeded during heavy rainfall--flushing into the oceans plastic tampon applicators, condoms, thin pieces of plastic sheeting from sanitary napkins and disposable diapers.
- Some municipal wastewater treatment plants discharge plastics directly from both primary and secondary sewage treatment plants, or dump floatable plastics along with treated sewage sludge. In the late 1970's, an estimated 1,000 plastic tampon applicators were dumped with sewage sludge in the New York Bight every day. Today the amount is thought to be considerably higher.

Not only are plastic objects prevalent at sea, but researchers are finding that tiny plastic pellets, the feedstock of the plastics industry, have become a ubiquitous component of marine litter. Plastic pellets are the raw form of plastic after it has been manufactured from petrochemicals and before it is molded into plastic products. These pellets probably enter the ocean via rivers near outfalls of plastic manufacturing and processing plants or by escapement during transportation. Although the amount of pellets entering the sea each year is unknown, concentrations have been measured to range from 34,000 pellets per square kilometer on the ocean surface to 20,000 per square meter on beaches. One company--Dow Chemical's Louisiana Division--has reported that by installing special equipment, they reclaim about 5 million pellets each day that would otherwise escape into marine areas.

Why should we be concerned about this persistent debris?

While most man-made debris can create aesthetic or environmental problems, the qualities that have made plastics so successful make plastic debris a particular threat in the ocean. Since much plastic floats, ocean currents transport it to shore. Even in remote areas of Antarctica researchers now find plastic bottles, bags and sheeting washing ashore.

This accumulation of plastic debris is not only unsightly--it's costly. Coastal communities bear the burden of aesthetic degradation resulting in lost tourism revenues and costly cleanup procedures. Texans spend $4,000 per mile per year to remove beach litter that washes ashore from the Gulf of Mexico. But improperly disposed plastics create more than a litter problem.

Persistent Debris Kills Marine Wildlife

Plastic debris is killing thousands of marine animals every year. Seals that investigate floating plastics become entangled, and strangle in objects such as strapping bands and net fragments. Up to 30,000 northern fur seals may die this way each year. Sea turtles accidentally swim into lost pieces of rope, fishing line or other objects and drown. Birds not only become entangled in plastics such as 6-pack rings and fishing line, but collect plastic trash for nest materials creating death traps for their young.

But entanglement is not the only threat--marine wildlife eat plastic items mistaken for food causing internal injury, intestinal blockage, and starvation. Fifty of the world's 280 species of seabirds are known to ingest small pieces of plastic, especially raw plastic pellets. Fish have been found with raw plastic pellets blocking their guts and intestines. Sea turtles often mistake bags and sheeting for jellyfish, a favorite prey item. Even the great whales are victims--one was found with more than 4 dozen plastic bags impacted in its stomach.

The threat plastic debris poses for marine animals is compounded by the fact that many affected species, such as sea turtles, already face extinction from other human caused factors. And while plastic debris has been shown to affect a variety of wildlife, we don't yet know its broader impacts on their populations, communities or ecosystems.

Persistent Debris Wastes Fishery Resources

The U.S. fishing industry is losing millions of dollars each year due to plastic debris. Not only is time wasted in removing plastic trash from fishing gear and catch, but higher costs are associated with derelict fishing gear that because of its durability continues to catch and waste fish indefinitely. For example, the New England lobster fishery loses over 500,000 traps per year. The "ghost fishing" by these synthetic traps results in the annual loss of more than a million pounds of lobster. In the western Gulf of Alaska, more than 30,000 king and tanner crab traps have been lost since 1960. Fish and shellfish in these traps become bait for others thus sustaining a never-ending cycle of ghost fishing throughout the lifetime of the trap. Derelict nets that remain suspended by buoys or snag on the bottom also continue to catch fish. One abandoned gillnet recovered in the North Pacific measured over 9 miles. Entangled in the webbing were hundreds of salmon. Hundreds more probably had become ensnared and dropped out of the net before it was found.

Persistent Debris Endangers Human Safety

Plastic debris in the form of fishing nets, line, bags and sheeting are floating menaces that foul propellors and clog engine intakes. While statistics have not been gathered on the frequency of these occurrences, vessel disablements of this type are reported nationwide. Garbage bags are considered to be the leading external cause of engine disablement in the North Atlantic. In the Gulf of Mexico, large pieces of plastic sheeting discarded by offshore petroleum and merchant shipping industries often disable vessels. In some instances, seafarers have attributed fatalities, particularly in the Bering Sea, to disablements of this type.

Most recently, though, CEE's efforts have focused not on describing the problem, but on exploring and implementing solutions. The Center's primary emphasis has been on educating those who contribute to marine debris, so that they can take a hand in reducing the problem. This Saturday, more than 3,000 Texans are expected to converge on their Gulf Coast beaches for what promises to be the biggest volunteer beach clean up in the world. Last year, in CEE's first Texas beach clean up, citizens of all ages, educators and state officials walked 122 miles of Texas beach and picked up 124 tons of trash. Information from that collection is being used now to analyze where Texas beach trash comes from, and how we might get rid of it. CEE's data cards and reports also have served as a model to help Seagrant agents and others get beach clean-ups going in Delaware, North Carolina, Florida, Mississippi, and Louisiana. CEE staff, in cooperation with the federal government and the plastics industry have produced a major, multi-media education program--part of which is on display here today--aimed at merchant shippers, commercial fishermen, and plastics manufacturers.

If our involvement has led to any conclusion, it is this: marine debris is a widespread, long-lasting, and costly problem that requires the attention, resources, and problem solving ingenuity of business, industry, government, and citizenry alike. There is no lone solution, no single approach, no sole industry that can provide the whole answer.

Our ideas for solving the problem must be as diverse as the problem itself.

What are some of the present ideas for solutions?

Several bills introduced in this body and in the House would require degradability for certain kinds of plastic products or control their disposal. Most of these proposals also call for studies and research.

As indicated above, CEE believes that the real key to solving the marine debris problem is in educating those who use plastic materials and products on or near the oceans in how to dispose of them properly. However, there is some point at which government may have to step in to help modify behavior through regulation when education is not enough. There are two tracks which such regulation could take: regulation of the debris items themselves, or regulation of those who use and dispose of them.

Degradability

Using the first approach, it has been suggested that the government mandate degradability for all plastic products. While this may seem appealing as a "quick fix," CEE does not believe it provides the whole answer. In the first place, it does nothing to discourage the practice of using the ocean as a garbage can. If consumers and seafarers thought all plastic products were degradable, they would have no incentive to stop pitching wastes overboard or to carry them away from our beaches. Second, not all plastic products lend themselves to degradable applications--food containers, for example. Third, we would want assurances, which do not exist now, that the byproducts of degradation do not pose equal or additional threats to wildlife and the environment. Finally, we believe any requirement for degradability of plastic products should most practically single out those products and items that are known to pose the most harm to marine organisms.

For example, we support measures that would require that plastic beverage yokes ("six-pack rings," "loop connectors") be degradable. These devices are known to entangle birds, fish, marine mammals and turtles. Eleven states already require that beverage yokes be degradable, a requirement that the industry has been readily able to accept. Other plastic debris items that are known to pose a hazard for marine birds, mammals and sea turtles are plastic ropes, monofilament line, plastic bags, sheeting and film used for covering cargo, plastic strapping bands, and plastic nets, webbing and traps used in commercial fishing operations. For example, connectors on the panels of traps could be constructed of degradable materials to limit the capacity of these devices to continue ghost fishing once they have been lost or discarded. Any examination of the feasibility of requiring degradability should target on these high risk items, and examine the practicality of degradable applications.

At a June symposium, representatives of the plastics industry reported that the technology exists to make many types of items degradable, it simply has not been applied yet to the specific products in question. We learned just last week, for example, that an Illinois manufacturer which makes degradable six-pack yokes is about to get into the business of producing photo-degradable strapping bands, as well.

Studies and Further Research

Several legislative proposals call for studies to identify and quantify the harmful effects of discarding plastics in the marine environment. We suggest that many of the effects of persistent marine debris are known, and that more time to study effects should not be used as an excuse to delay needed action.

In making its decisions about what additional studies and reports federal agencies should make to Congress, we urge that first gaps in information should be identified. Is this information necessary before further action can be taken? What are the results to be expected? For example, it has been pointed out that no one knows the extent of the effects of ingestion of small plastic pieces and resin pellets by birds and fish. The answer to this question is needed before we can make further decisions about mandating degradability, or accepting trash grinding as an alternative disposal method. If degradability or grinding simply result in putting smaller pieces of plastic into the ocean, and those pieces are found to cause problems, then we need to consider other options. Research which is keyed to assist decision makers in reducing debris should be identified and supported.

One area that has been identified as needing further investigation and quantification is the problem of marine debris from land-based sources. While this type of persistent debris is identifiable by its type (domestic containers, personal products, etc.), no one has yet been able to target how much, where it comes from, or how to stop it. This is a subject of appropriate inquiry, particularly now after the Islip barge and closed Jersey shore beaches have made their impression on the national psyche: we are no longer capable of handling our overflowing wastes and the ocean is bearing the brunt of that failure.

Controlling Ocean Disposal

The second path available for reducing debris is to control disposal. This approach focuses on the user/disposer. A major opportunity to control disposal of garbage in the marine environment is implementation of MARPOL Annex V by the United States. Senate ratification of this international protocol would prohibit vessels from discarding plastics in the ocean and limit disposal of other wastes to certain distances from land.

Implementing the regulations of Annex V by the U.S. would prohibit or limit dumping by the merchant, passenger, fishing, and recreational vessels of the United States, and foreign vessels while in the U.S. Exclusive Economic Zone. Coastal states would be required to provide adequate garbage reception facilities in ports.

Any implementation regime for Annex V must, at a minimum, provide (1) incentives to comply with the law, (2) procedures and facilities that make it reasonable and economically feasible to comply, (3) a method to ensure compliance and the resources to enforce it.

Dumping shipboard waste at sea has been a long-standing practice, not because of any bad intentions, but simply because it is easy. Changing this practice is going to require more than the stroke of a pen or the vote of the Senate. Our first choice for compliance incentives would be information and education, which we will discuss in more detail below. But education is a long-term process; in the short term, we must consider other options.

Certainly penalties for failing to comply are one kind of incentive, or more accurately, a disincentive to ocean dumping. Another approach might be the use of mandatory fees which cover the cost of trash reception and disposal in port, but which would be paid whether the vessel used the facilities or not. Such a fee would need to be high enough to avoid the temptation to continue to dump at sea and just pay the fee as a cost of doing business.

Another type of incentive could be to encourage vessels to get rid of trash by some method that not only avoids dumping, but avoids carrying it into port as well. Research and development grants, tax credits, or rebates to those companies whose vessels use on board incinerators, for example, might encourage development and use of such technology.

The second element in making implementation of Annex V workable is to provide technically and economically feasible procedures and facilities. These procedures need to take into account the diversity of the vessel traffic at U.S. ports, and the capabilities of those ports.

It would be unreasonable, for example, to require a small harbor that serves principally fishing vessels of a size between 5 and 20 gross tons, and which don't stay out for more than a day, to provide the same level of reception facilities as a world class port that berths merchant vessels returning from voyages as long as two weeks.

Reception facilities at ports serving the coastwise, noncontiguous and intercoastal trade will have to differ from those ports serving oceangoing merchant vessels, because of U.S. Department of Agriculture requirements for the treatment and handling of foreign food wastes. Marinas that dock the thousands of recreational vessels in the U.S. pose yet another distinction. In other words, let us not mandate incinerators at every port, when in some cases a big trash barrel on the dock will do.

The Administration's proposal for implementation contains some of these elements. However, there are some items missing. Before describing exact amendments we would recommend to the administration proposed bill, we would point out that some ideas are best left out of legislation, and carried out through regulations, guidelines, and policies. In carrying out the policies set forth in whatever legislation passes, the responsible agencies should take the following into consideration:

- Waste disposal at marinas and harbors that cater principally to recreational boaters and fishing vessels under 5 gross tons could be achieved by education and encouragement of voluntary compliance. Marinas should be required to post signs about trash receptacles and disposal requirements.

- The Coast Guard should include information on proper trash disposal in boater safety courses.

- States should be encouraged to use informational posters or stickers at vessel registration points or include information on proper waste disposal with vessel registration documents. All could be low cost methods of educating mariners about the prohibitions against dumping.

- For purposes of encouraging compliance, a written record of method of garbage disposal should be required for ocean going vessels of more than 1,000 gross tons. At minimum, such a record should include the signature of the ship's master or agent affirming that ship garbage was disposed in compliance with the convention. Such a log should be available for inspection by the U.S. agency responsible for enforcement.

- U.S. vessels five tons or greater should be required to display galley notices pertaining to garbage dumping restrictions, telephone numbers for reporting violations, and description of penalties.

- Terminals servicing vessels 1000 tons or greater should be required (and other terminals encouraged) to post notices providing the same information. In addition, terminals should be required to provide readily accessible information about disposal facilities available, and about U.S.D.A. certified waste management companies which are authorized to handle foreign ship's wastes.

Important elements which we believe must be included in any legislation to implement Annex V in the U.S. are:

1) compliance by U.S. public vessels by a time certain;

2) implementation in U.S. waters and by U.S. vessels by a

time certain, with or without international entry into force of Annex V;

3) provision for citizen suits and payment of rewards;
4) multi-agency enforcement authority.

The United States owns and operates hundreds of "public" vessels, which are exempt from the requirements of Annex V as it is formulated in the international protocol. That protocol, however, does not bar party nations from legislating stricter compliance requirements--it is simply a minimum.

Although we acknowledge special circumstances must be considered with regard to national security, it seems to us that the Navy, the Coast Guard, and NOAA should be held to a stricter standard than that provided in the various proposals to implement Annex V. We know, for example, that the National Oceanic and Atmospheric Administration already requires its vessels to dispose of wastes in a manner consistent with Annex V regulations. If the Navy and Coast Guard cannot comply, given their operational capabilities, then those capabilities should be examined.

Generally, I have been disappointed at the response of the Navy throughout the national dialogue to identify solutions to the marine debris problem. The Navy is unique among sources of ocean garbage in its efforts to exempt itself from controls rather than to constructively cooperate in solutions to a problem of which it is a part. Surely there are potential new policies regarding training voyages, homeport activities, and other routine operations that could be adopted to reduce the amount of garbage dumped overboard. The Department of the Navy has ignored such inexpensive and common sense approaches in favor of proposals to take decades to develop expensive technological alternatives. One cannot but be sympathetic to the particular and sensitive problems of national security, but as a citizen, I also cannot help but wonder. Why can't the Navy keep garbage on board during short voyages? Why do Soviet vessels shadowing our fleets collect our garbage? Why can't the Navy manage its garbage without adding millions of dollars to the Defense Budget?

CEE therefore supports proposed House language that would require a date certain, currently proposed to be five years, by which time the Navy would comply with the requirements of Annex V regulations. If upon review the Department determines it cannot comply, we suggest it come back to Congress and request an extension. In the meantime, we recommend that the Subcommittee call for a report, from the U.S. Navy, Coast Guard, and the NOAA, to provide information on: (1) the present practices of U.S. public vessels for disposing of shipboard wastes; (2) present capabilities of public vessels to handle on-board wastes by methods other than ocean disposal, (3) a status of best available shipboard waste-handling technology, (4) an estimation of the cost of outfitting U.S. public vessels with the best available technology, (5) an assessment of the time by which public vessels can comply with Annex V, and (6) an assessment of the feasibility of changing procurement and provisioning practices to reduce the amount of non-degradable plastics taken aboard vessels.

Current proposals for implementation of Annex V in the U.S. key that implementation to entry into force of the Annex. Entry into force will take place one year from the date on which not less than 15 States, the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant shipping, have become parties by depositing their ratification with the International Maritime Organization. Assuming that the Senate will ratify Annex V this month, as it is expected to do, the deposit of a U.S. instrument of ratification will bring the total representation of world shipping tonnage to more than the required 50%, thereby putting Annex V into force sometime in late 1988.

We have an opportunity here to be a leader, instead of a follower--U.S. ratification, while it may be effective in completing the tonnage requirement, lags behind that of 27 other nations including Japan, Korea, most of the EEC and the Soviet Union. Within reason, that is to say within a time by which vessels and ports can be expected to be able to comply with the provisions of Annex V, the U.S. should implement its provisions in the U.S., independent of the entry into force of the international agreement. Why not make the effective date one year from passage of the Act, rather than one year from entry into force of MARPOL Annex V?

Each of the proposed bills before this committee provides for penalties for violations of the Act and of Annex

V. Nowhere in the existing language of the Act to Prevent Pollution from Ships is there a provision to allow a portion of the penalties assessed to be paid to persons giving information leading to the assessment of such penalty. We believe that a provision for payment of up to one half of such penalties would provide assistance in enforcement efforts.

Finally, legislation implementing Annex V in the U.S. must address the fact that many different agencies have authority and jurisdiction in the overlapping issues that arise in the context of vessel-source plastic dumping. The Act to Prevent Pollution from Ships, the likely vehicle for implementing various legislative proposals, is administered principally by the Departments of Commerce (NOAA) and Transportation (Coast Guard). However, the Department of Agriculture, for example, has the only existing program for certifying waste disposal systems in ports. The cooperation and involvement of its agents in U.S. ports is critical to the success of any Annex V implementation scheme. Similarly, the EPA, the National Marine Fisheries Service, and other agencies which are likely to have personnel in port areas should be consulted and involved.

Our efforts to ratify and implement Annex V are important, and will go a long way toward reducing the amount of persistent debris in our oceans. It is, however, not a panacea, because ocean disposal of shipboard waste is just one component of the problem.

Accidental loss of packing materials at sea, deliberate or accidental loss of fishing gear, sewage sludge disposal and waste treatment overflows, industrial wastes, run-offs from landfills, and littering all contribute to plastic in the oceans. This diversity of debris and its origins points up the need to look beyond the singular issue of ocean disposal of ship waste. It also demonstrates the need for a broad spectrum national approach that involves not just one, but several federal agencies.

We urge the committee, in reviewing the legislative proposals before it, to articulate a clear expression of Congressional intent that those agencies begin to tackle the problem, not by addressing issues like degradability or ocean dumping piecemeal, but by approaching the issue cooperatively and in its entirety. This means a Congressional mandate that we look at all the sources of persistent marine debris, and we apply all the existing authority, knowledge and expertise we have. Only then, we believe, will the agencies with the authority to handle the various component parts of the problem join the effort to develop and implement a coordinated and effective national policy for reducing marine debris and the harm it causes our oceans and coastlines.

Citizen Awareness As A Means To Reduce Persistent Marine Debris

CEE has long advocated that voluntary changes in behavior brought about by education and awareness of marine conservation issues is preferable to government mandating those changes. When it comes to the issue of persistent marine debris, we are not alone in that contention.

The Workshop on the Fate and Impact of Marine Debris, sponsored in 1984 by the National Marine Fisheries Service, is the event considered to be the starting point of the present major focus on persistent debris as an important marine pollution issue. Throughout the workshop, participants recommended educational efforts as the most effective first step in addressing the problem.

The Marine Entanglement Research Program, which we noted earlier is the only federal program directly targeted at this issue, has made education a major component of its program. Current efforts have been aimed principally at industry groups such as the commercial fishing, maritime and platics industries.

You have heard today from the Society for the Plastics Industry about their current advertising campaign, and the ongoing commitment to educate their own industry and others on this issue.

The National Marine Debris Roundtable, a panel of individuals with a national perspective on marine debris issues and solutions, acts as an advisory panel to the Entanglement Program. This group, too, has repeatedly recognized that not just affected industries, but the general public, would benefit from education efforts, particularly aimed at the need to handle and dispose of persistent materials (plastics) responsibly.

Last month, at the National Marine Pollution Program workshop on persistent marine debris, education as a way to mitigate the harmful effects of debris, was brought up repeatedly by workshop participants from a wide variety of perspectives.

We urge the Committee to encourage the federal agencies with authority and expertise in this area to concentrate the efforts of their public affairs and public information programs on the marine debris issue. National Parks, Refuges and Seashores, the Sea Grant Program, consumer affairs programs, boater education courses are all potential outlets for reaching millions of Americans with the message "stow it, don't throw it."

STATEMENT OF
MR. EVERETT PYATT
ASSISTANT SECRETARY OF THE NAVY
FOR SHIPBUILDING AND LOGISTICS
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION OF THE SENATE COMMITTEE ON ENVIRONMENTAL AND PUBLIC WORKS
ON
PLASTIC POLLUTION IN THE MARINE ENVIRONMENTAL
AND
IMPLEMENTATION OR ANNEX V OF MARPOL 73/78

17 SEPTEMBER 1987

Good morning Mr. Chairman and members of the Subcommittee. I am Everett Pyatt, the Assistant Secretary of the Navy for Shipbuilding and Logistics.

The Navy supports the goals of eliminating the discharge of plastic from ships at sea and the prohibition of the discharge of floatable solid waste within 25 miles from shore. We currently discharge no floatable solid waste within 25 miles of shore. We are committed to eliminating the discharge of plastic waste into the ocean from Naval ships as soon as possible, not only because it is the right thing to do environmentally, but also because of the potential hazard from shipboard fire. We are developing the necessary equipment and are prepared to purchase commercial equipment if available and effective.

When these actions are fully implemented the Navy will not only discharge no plastic at sea, we will discharge no floatable solid waste of any kind. This goes far beyond Annex V of the MARPOL Convention.

We also are examining the way we buy supplies for our ships and the way we live, generate, and process wastes on ships in order to reduce wastes. We will specify changes in packaging to reduce the amount of plastic which gets to ships.

In a few days, I will invite environmental groups to scrutinize how we generate and dispose of waste on ships and ask them to recommend how to reduce the waste we discharge at sea.

Let me caution you against thinking the oceans will be pristine when we have fully implemented our strategies to eliminate the discharge of solid waste at sea from U. S. Navy ships. Drawing from numbers in the Center for Environmental Education's February, 1987 report, U.S. Navy ships generate only 0.2% of the plastic waste generated by the worldwide commercial fishing industry, merchant shipping, passenger ships, and recreational vessels.

Nonetheless, the Navy is concerned that it contributes even this amount of the solid waste disposed of at sea that is why we support the goals of Annex V of the MARPOL Convention and of S.559, 560, and S.663 in reducing the solid waste disposed of at sea from ships.

U.S. Department
of Transportation
**United States
Coast Guard**

Commandant
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STATEMENT OF CAPTAIN CHARLES R. CORBETT

U.S. COAST GUARD

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

SEPTEMBER 17, 1987

GOOD MORNING, MR. CHAIRMAN:

I AM CAPTAIN CHARLES R. CORBETT, WITH THE COAST GUARD'S OFFICE OF MARINE SAFETY, SECURITY AND ENVIRONMENTAL PROTECTION AT COAST GUARD HEADQUARTERS IN WASHINGTON, D.C. IT IS A PLEASURE FOR ME TO APPEAR BEFORE YOU TODAY TO PRESENT OUR COMMENTS AND RECOMMENDATIONS AS TO THE BEST MEANS TO CONTROL AND REDUCE POLLUTION FROM PLASTIC WASTES AND IMPLEMENT ANNEX V OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS REVISED BY THE 1978 PROTOCOL RELATING THERETO (MARPOL 73/78).

MR. CHAIRMAN, IN PREVIOUS TESTIMONY BEFORE THIS AND OTHER CONGRESSIONAL COMMITTEES, THE COAST GUARD HAS STATED ITS CONCERNS REGARDING THE HAZARDS TO THE MARINE ENVIRONMENT FROM GARBAGE, PARTICULARLY PLASTICS AND OTHER SYNTHETIC MATERIALS INCLUDING SYNTHETIC FISHING NETS. WE HAVE ALSO STRESSED THE IMPORTANCE OF ESTABLISHING INTERNATIONAL STANDARDS TO SOLVE THIS INTERNATIONAL PROBLEM THROUGH IMPLEMENTATION OF ANNEX V OF MARPOL 73/78. AS EVIDENCE CONTINUES TO MOUNT INDICATING THE MAGNITUDE AND SEVERITY OF THE MARINE DEBRIS PROBLEM, INCLUDING BUT NOT LIMITED TO U.S. COASTAL STATES, I CAN ADD THAT WE HAVE NEVER BEEN MORE FIRM IN OUR RESOLVE TO REALIZE THE GOAL OF U.S. RATIFICATION OF ANNEX V AND ULTIMATELY ITS WORLDWIDE IMPLEMENTATION THAN WE ARE TODAY.

CURRENT U.S. STATUTES DO NOT ADEQUATELY ADDRESS THE AT-SEA DISPOSAL OF SHIP-GENERATED GARBAGE. THE PRINCIPALLY APPLICABLE STATUTE IS THE REFUSE ACT OF 1899 (33 USC 407) WHICH PROHIBITS THE DISPOSAL OF GARBAGE INTO U.S. NAVIGABLE WATERS INCLUDING THE TERRITORIAL SEA. HOWEVER, THIS STATUTE IS DIFFICULT TO ENFORCE AND PROSECUTE SINCE A VIOLATION CARRIES VERY SMALL CRIMINAL FINES. ON THE OTHER HAND, ANNEX V OF MARPOL 73/78 IS SPECIFICALLY TAILORED TO ADDRESS THIS GLOBAL PROBLEM.

MARPOL 73/78 AS YOU MAY KNOW, MR. CHAIRMAN, IS THE PRIMARY INTERNATIONAL REGIME AIMED AT PREVENTING UNNECESSARY AND UNCONTROLLED DISCHARGES OF POLLUTANTS INTO THE OCEANS OF THE WORLD FROM SHIPS. ANNEX V OF MARPOL 73/78, REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS, OFFERS THE POTENTIAL FOR ESTABLISHING CONSIDERABLY MORE STRINGENT AND ENFORCEABLE DISCHARGE REQUIREMENTS FOR GARBAGE, INCLUDING PLASTICS, ON A WORLDWIDE BASIS.

THERE ARE TWO MAJOR ADVANTAGES TO RATIFYING ANNEX V IN LIEU OF ESTABLISHING UNILATERAL DOMESTIC STANDARDS. ANNEX V OFFERS HARMONY AND UNIFORMITY THROUGH THE ESTABLISHMENT OF INTERNATIONAL STANDARDS TO ADDRESS AN INTERNATIONAL PROBLEM. ALSO, SUCH ACTIONS WOULD DEMONSTRATE TO THE WORLD OUR RESOLVE TO PROTECT THE MARINE ENVIRONMENT GIVING DUE CONSIDERATION TO THE JOINT EFFORTS OF THE INTERNATIONAL COMMUNITY.

AT THE JULY 7 HEARING BEFORE THIS COMMITTEE, REAR ADMIRAL KIME EXPLAINED THE COAST GUARD'S PAST WORK REGARDING ANNEX V. HE ALSO STATED THAT THE U.S. DELEGATION TO THE INTERNATIONAL MARITIME ORGANIZATION'S (IMO) MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC) IS NOW IN THE PROCESS OF DRAFTING INTERNATIONAL GUIDELINES TO ASSIST IN THE EFFECTIVE IMPLEMENTATION AND ENFORCEMENT OF ANNEX V. THESE DRAFT GUIDELINES WILL BE SUBMITTED TO THE MEPC AT ITS 25TH SESSION SCHEDULED FOR NOVEMBER 30 - DECEMBER 4, 1987.

THE COAST GUARD BELIEVES THAT WORKING THROUGH MARPOL 73/78 WILL ULTIMATELY FACILITATE BETTER INTERNATIONAL COOPERATION REGARDING COMPLIANCE WITH THE REQUIREMENTS. FOR EXAMPLE, MR. CHAIRMAN, WE HAVE EXPERIENCED VERY HIGH COMPLIANCE RATES FOR THE ANNEX I PROVISIONS OF MARPOL 73/78 (COVERING POLLUTION BY OIL FROM SHIPS) AS IDENTIFIED THROUGH OUR VESSEL BOARDING ENFORCEMENT PROGRAM. THE MOST RECENT DATA AVAILABLE SHOWS A BETTER THAN 98% COMPLIANCE RATE FOR THE YEARS OF 1985 AND 1986. OTHER GOVERNMENTS HAVE

REPORTED SIMILAR COMPLIANCE RATES (i.e., JAPAN - 100%, UNITED KINGDOM - 96%, FEDERAL REPUBLIC OF GERMANY - 90%, AND NORWAY - 97%). TO PUT THESE RESULTS IN A BETTER PERSPECTIVE, IT MUST BE REMEMBERED THAT ANNEX I HAS ONLY BEEN IN FORCE SINCE OCTOBER 2, 1983. FURTHERMORE, FOR CASES INVOLVING ALLEGED VIOLATIONS REPORTED BY THE U.S. TO THE FLAG STATE IN WHICH SUFFICIENT EVIDENCE WAS PRESENT, MEANINGFUL PENALTY ACTION WAS TAKEN BY THE FLAG STATE. ALTHOUGH IT IS TOO EARLY TO GENERATE SPECIFIC COMPLIANCE DATA FOR ANNEX II OF MARPOL 73/78 (COVERING POLLUTION BY NOXIOUS LIQUID SUBSTANCES CARRIED IN BULK FROM SHIPS), WHICH JUST ENTERED INTO FORCE ON APRIL 6, 1987, PRELIMINARY INDICATIONS ARE VERY FAVORABLE AS WELL. THIS IS THE KIND OF SUCCESS THAT IS THE RESULT OF SOLVING GLOBAL PROBLEMS WITH GLOBAL SOLUTIONS.

AS YOU KNOW, MR. CHAIRMAN, SEVERAL BILLS INCLUDING S.560 AND S.633 HAVE BEEN INTRODUCED IN THE HOUSE AND SENATE TO IMPLEMENT ANNEX V. AT THE JULY HEARING, THE COAST GUARD PROVIDED SOME GENERAL COMMENTS CONCERNING THESE BILLS AS THEY RELATED TO THE ADMINISTRATION'S LEGISLATIVE PROPOSAL. SINCE THAT TIME THE ADMINISTRATION'S LEGISLATIVE PROPOSAL WAS SUBMITTED TO BOTH THE HOUSE AND SENATE. MR CHAIRMAN, WE ARE VERY PLEASED TO NOTE THAT S.560 HAS BEEN AMENDED AND S.1562 INTRODUCED TO REFLECT THIS PROPOSED LEGISLATION.

THE ADMINISTRATION SUPPORTS LEGISLATION THAT APPLIES THE ANNEX V REGULATIONS, THROUGH APPROPRIATE AMENDMENTS TO THE ACT TO PREVENT POLLUTION FROM SHIPS (APPS), 33 U.S.C. 1901 ET SEQ. THE REASON FOR THIS IS THAT APPS PROVIDES THE LEGAL STRUCTURE FOR APPLYING THE PROVISIONS OF MARPOL 73/78 ANNEXES WITHIN THE CONTEXT OF THE OVERALL CONVENTION REGIME. ESPECIALLY IMPORTANT IN THIS CONNECTION IS THE MARPOL 73/78 ANNEX AMENDMENT PROCEDURE PRESCRIBED IN ARTICLE 16 OF THE CONVENTION AND IMPLEMENTED BY SECTION 10(b) AND (c) OF APPS.

ARTICLES 4, 5, AND 6 OF MARPOL 73/78 PROVIDE FOR ENFORCEMENT ON A PORT STATE/FLAG STATE BASIS. OUR PROPOSAL WOULD PLACE PRIMARY RELIANCE ON THIS PORT STATE/FLAG STATE APPLICATION AND ENFORCEMENT REGIME WHICH HAS PROVEN SO EFFECTIVE IN THE FOLLOWING AREAS:

- OBTAINING BROAD, INTERNATIONAL ACCEPTANCE OF MARPOL 73/78;
- OBTAINING PROMPT, BROAD AGREEMENT ON U.S. SPONSORED AND SUPPORTED MEASURES TO IMPROVE ANNEXES I AND II OF MARPOL 73/78;
- OBTAINING A VERY HIGH DEGREE OF WORLDWIDE COMPLIANCE WITH ANNEX I; AND
- OBTAINING MEANINGFUL PENALTY ACTION FOR VIOLATIONS OF ANNEX I REQUIREMENTS WHEN THEY OCCUR.

MORE SPECIFICALLY, OUR PROPOSAL WOULD DIVIDE THE SHIPS SUBJECT TO ANNEX V INTO THREE CATEGORIES. THESE ARE: SHIPS OPERATING UNDER THE AUTHORITY OF THE UNITED STATES, SHIPS OPERATING UNDER THE AUTHORITY OF FOREIGN COUNTRIES WHICH ARE PARTIES TO ANNEX V, AND SHIPS OPERATING UNDER THE AUTHORITY OF FOREIGN COUNTRIES WHICH ARE NOT PARTIES TO ANNEX V. IN SO FAR AS U.S. AND OTHER ANNEX V PARTIES ARE CONCERNED, OUR PROPOSAL FOLLOWS THE PATTERN EMPLOYED BY APPS. U.S. SHIPS WOULD BE SUBJECT TO ANNEX V REQUIREMENTS AND THE ACT'S ENFORCEMENT PROCEDURES WHEREVER THOSE SHIPS ARE LOCATED.

SHIPS OF COUNTRIES WHICH ARE PARTY TO ANNEX V WOULD BE SUBJECT TO ANNEX V REQUIREMENTS AND THE ACT'S ENFORCEMENT PROCEDURES ONLY WHILE WITHIN THE NAVIGABLE WATERS OF THE U.S. BEYOND THE TERRITORIAL SEA (3 MILE LIMIT) PROVISION IS MADE FOR FORWARDING EVIDENCE OF VIOLATIONS OF ANNEX V, WHEREVER THOSE VIOLATIONS OCCUR, TO THE RESPECTIVE FLAG STATES FOR PROSECUTION.

SHIPS OF COUNTRIES WHICH ARE NOT PARTY TO ANNEX V WOULD BE SUBJECT TO REGULATIONS CONFORMING TO AND GIVING EFFECT TO ANNEX V REQUIREMENTS WHILE THEY ARE IN THE NAVIGABLE WATERS OF THE UNITED STATES OR THE U.S. EXCLUSIVE

ECONOMIC ZONE; AND THEY WOULD BE SUBJECT TO THE ACT'S ENFORCEMENT PROCEDURES, CONSISTENT WITH CUSTOMARY INTERNATIONAL LAW, WHEN THEY VIOLATE THOSE REGULATIONS. IN THIS REGARD, IT IS OUR VIEW THAT WHEN ANNEX V ENTERS INTO FORCE FOR THE U.S., ITS RELEVANT REGULATIONS CAN BE APPLIED IN THE EXCLUSIVE ECONOMIC ZONE TO NON-ANNEX V PARTY SHIPS AS GENERALLY ACCEPTED INTERNATIONAL STANDARDS. WE BELIEVE THAT THIS APPROACH WOULD PROVIDE FULL PROTECTION TO THE U.S. COASTLINE AND ADDITIONAL IMPETUS FOR NON-ANNEX V PARTY STATES TO RATIFY ANNEX V.

WE ARE SERIOUSLY CONCERNED THAT UNITED STATES APPLICATION OF THE ANNEX V REGIME TO THE EXCLUSIVE ECONOMIC ZONE, IN REGARD TO VESSELS OF OTHER PARTY STATES, WOULD BE COUNTER PRODUCTIVE. SUCH EXTENSION COULD DETER BROAD, GLOBAL ACCEPTANCE; ENTRY INTO FORCE; ENFORCEMENT AND SUBSEQUENT IMPROVEMENT OF THE ANNEX V REGIME.

MR. CHAIRMAN, IT IS ALSO VERY IMPORTANT THAT THE U.S. STATUTORY REGIME IMPLEMENTING ANNEX V BE LINKED TO ANNEX V ENTRY INTO FORCE FOR THE UNITED STATES BEFORE MAKING THE REGULATIONS EFFECTIVE. THE INTERNATIONAL LEGAL REGIME MUST BE IN FORCE FOR APPLICATION AND ENFORCEMENT OF ANNEX V PROVISIONS TO FOREIGN VESSELS. ANNEX V WILL ENTER INTO FORCE TWELVE MONTHS AFTER THE DATE ON WHICH NOT LESS THAN FIFTEEN (15) STATES, REPRESENTING FIFTY (50) PERCENT OF THE GROSS TONNAGE OF THE WORLD'S MERCHANT SHIPPING HAVE BECOME PARTIES TO IT. THIS TWELVE MONTH PERIOD IS PROVIDED TO GIVE ADMINISTRATIONS TIME TO DEVELOP AND PROMULGATE REGULATIONS AND TO ENSURE THAT RECEPTION FACILITIES ARE AVAILABLE. THE LAST COUNTRY TO RATIFY ANNEX V WAS THE SOVIET UNION ON AUGUST 14, 1987. THIS BRINGS THE CUMULATIVE WORLD TOTAL FOR RATIFICATION UP TO 28 STATES REPRESENTING 48 PERCENT OF THE WORLD'S SHIPPING TONNAGE. THE UNITED STATES, WHICH REPRESENTS 4.91 PERCENT OF THE WORLD'S SHIPPING TONNAGE, HAS THE OPPORTUNITY TO BRING THE ANNEX INTO FORCE INTERNATIONALLY. IN SHORT, MR. CHAIRMAN, ALL EYES ARE UPON US.

MR. CHAIRMAN, SUBSTANTIAL CRIMINAL SANCTIONS AND EFFICIENTLY ASSESSABLE CIVIL PENALTIES FOR VIOLATIONS OF THE ANNEX V REGULATIONS ARE CRITICAL TO ACHIEVING EFFECTIVE ENFORCEMENT. WE BELIEVE THAT, WITHIN THE SCOPE OF THE APPS AND CONSISTENT WITH INTERNATIONAL LAW, WILLFUL VIOLATORS OF ANNEX V SHOULD BE SUBJECT TO THE SAME CRIMINAL SANCTIONS (INCLUDING UP TO A $50,000 FINE) AND CIVIL PENALTIES (NOT MORE THAN $25,000) THAT ARE CURRENTLY IN APPS AND APPLICABLE TO ANNEXES I AND II.

OUR LEGISLATIVE PROPOSAL INCLUDES THE REQUIREMENT THAT PERSONS IN CHARGE OF SPECIFIED PORTS AND TERMINALS PROVIDE GARBAGE RECEPTION FACILITIES AS REQUIRED BY REGULATION. IT ALSO PROVIDES AUTHORITY TO DENY ENTRY OF A SHIP TO A PORT OR TERMINAL THAT IS REQUIRED BY REGULATIONS TO PROVIDE RECEPTION FACILITIES, IF THE PORT OR TERMINAL IS NOT IN COMPLIANCE WITH THOSE REGULATIONS. THIS LATTER ENFORCEMENT APPROACH IS VERY SIMILAR TO THAT UNDER THE CURRENT APPS FOR ANNEX I AND II OF MARPOL 73/78 AND HAS PROVEN VERY EFFECTIVE IN ENSURING COMPLIANCE.

IN ADDITION, WE ARE CONSIDERING A REQUIREMENT FOR LETTERS OR CERTIFICATES OF ADEQUACY TO MAJOR PORTS OR TERMINALS PROVIDING RECEPTION FACILITIES UNDER ANNEX V. A SIMILAR REQUIREMENT HAS BEEN VERY EFFECTIVE IN ENSURING RECEPTION FACILITIES FOR ANNEXES I AND II.

MR. CHAIRMAN, NO FEDERAL AGENCY SHOULD BE REQUIRED TO PROVIDE OR ARRANGE FOR THESE RECEPTION FACILITIES, NOR SHOULD THE FEDERAL GOVERNMENT SHOULDER THE COST OF AUGMENTING THEM. AT PRESENT THE SECRETARY OF AGRICULTURE REGULATES CERTAIN TYPES OF GARBAGE ENTERING THE U.S., AND REPRESENTATIVES FROM THAT DEPARTMENT HAVE PREVIOUSLY ADVISED THAT THEY ANTICIPATE RECEPTION FACILITY VOIDS BEING FILLED BY PRIVATE INDUSTRY. THE COAST GUARD WILL CONSULT WITH THE DEPARTMENT OF AGRICULTURE (DOA) AND OTHER APPROPRIATE DEPARTMENTS AND AGENCIES

IN THE DEVELOPMENT OF REGULATIONS FOR RECEPTION FACILITIES TO ENSURE THEY ARE COMPATIBLE WITH CURRENT RELATED REGULATIONS.

AT THIS POINT, MR. CHAIRMAN, I WILL ADD THAT IT IS ESSENTIAL THAT THE IMPLEMENTING LEGISLATION FOR ANNEX V PROVIDE THE FLEXIBILITY NECESSARY FOR ENFORCEMENT AND COMPLIANCE IN LIGHT OF THE WIDESPREAD INTERNATIONAL SUPPORT, FAVORABLE ENDORSEMENTS BY U.S. MERCHANT SHIPPING AND FISHING INDUSTRIES, AND THE VARIETY OF PORTS (FOR EXAMPLE, MARINAS, YACHT BASINS, SMALL FISHING VILLAGES) WHICH WOULD BE REQUIRED TO HAVE ADEQUATE RECEPTION FACILITIES. FURTHERMORE, FROM OUR EXPERIENCE WITH ANNEXES I AND II OF MARPOL 73/78, WE ANTICIPATE MOST SHIP OPERATORS WILL ACT RESPONSIBLY WITH REGARD TO ANNEX V REGULATIONS. AGAIN, THE GUIDELINES WHICH WE ARE PREPARING WILL DESCRIBE ADDITIONAL MEASURES TO ASSIST IN EFFECTIVE ENFORCEMENT OF THE ANNEX. FOR EXAMPLE, ONE OF THE RECOMMENDATIONS WE ARE CONSIDERING IS THE USE OF A RECORD BOOK OR LOG ENTRY TO DOCUMENT THE DATE, TIME, LOCATION, TYPE AND ESTIMATED AMOUNT OF GARBAGE DISPOSED BY THE VESSEL AT SEA OR ASHORE. BECAUSE THESE GUIDELINES WILL ALSO HAVE THE SUPPORT OF THE INTERNATIONAL COMMUNITY, WE CAN ANTICIPATE THEIR WIDESPREAD USAGE.

AS TO THE COVERAGE OF PUBLIC VESSELS, OUR PROPOSAL DOES NOT ALTER THE APPROACH CURRENTLY TAKEN IN SECTION 3(d) OF APPS. UNDER THAT PROVISION, THE HEADS OF THE RESPECTIVE FEDERAL DEPARTMENTS AND AGENCIES ARE DIRECTED TO PRESCRIBE STANDARDS FOR PUBLIC VESSELS WHICH SHALL ENSURE, SO FAR AS IS REASONABLE AND PRACTICABLE WITHOUT IMPAIRING THEIR OPERATIONS OR OPERATIONAL CAPABILITIES, THAT THEY ACT IN A MANNER CONSISTENT WITH MARPOL 73/78 (WHICH WOULD INCLUDE ANNEX V WHEN IT ENTERS INTO FORCE). AS FOR COAST GUARD VESSELS, MR. CHAIRMAN, THEY HAVE ALREADY BEEN INSTRUCTED TO COMPLY WITH THE ANNEX V PROHIBITIONS, INCLUDING THE ABSOLUTE PROHIBITION AGAINST PLASTIC DISPOSAL AT SEA.

IN CLOSING, MR. CHAIRMAN, I WANT TO EMPHASIZE THAT THE COAST GUARD, BEING A SEAGOING SERVICE WITH LAW ENFORCEMENT RESPONSIBILITIES, IS ESPECIALLY AWARE OF THE DIFFICULTIES OF ENFORCEMENT OF THE ANNEX V PROVISIONS AT SEA, PARTICULARLY THE DETECTION OF VIOLATIONS REGARDLESS OF WHICH ENFORCEMENT REGIME APPLIES. ENFORCEMENT OF THESE OR ANY GARBAGE DISPOSAL STATUTES FOR THE MARINE ENVIRONMENT WILL NOT BE EASY. HOWEVER, THE APPROACH BEING SOUGHT BY S.560 AS AMENDED, S.1562, AND THIS ADMINISTRATION OFFERS THE BEST OPPORTUNITY AND FLEXIBILITY TO FACILITATE ESSENTIAL INTERNATIONAL COOPERATION IN THIS WORTHWHILE ENDEAVOR IN ADDITION TO PROVIDING FULL PROTECTION TO THE U.S. COASTLINE. THIS COOPERATION WILL NOT BE LIMITED TO ESTABLISHMENT AND APPLICATION OF THE NECESSARY LEGAL AUTHORITY, BUT WILL INCLUDE AN ONGOING COMMITMENT TO EDUCATE SEAFARERS AND THE PUBLIC WORLDWIDE AS TO THE SEVERE CONSEQUENCES FROM PLASTIC POLLUTION IN THE MARINE ENVIRONMENT.

AS I NOTED, THE COAST GUARD HAS A GREAT DEAL OF EXPERIENCE OF EFFECTIVE CONTROL UNDER ANNEX I OF MARPOL 73/78 AND SOME UNDER ANNEX II FROM WHICH WE CAN EXPECT ENFORCEMENT OF THE ANNEX V PROVISIONS TO ALSO BE VIGOROUSLY PURSUED BY THOSE NATIONS WHICH ARE PARTIES TO ANNEX V. WE ARE CONVINCED A GLOBAL EFFORT COORDINATED WITHIN THE FRAMEWORK OF THE MARPOL 73/78 REGIME WILL SUCCEED IN REDUCING THE QUANTITY OF MARINE DEBRIS IN THE OCEANS.

I ASK YOUR SUPPORT FOR EARLY RATIFICATION AND PASSAGE OF THE LEGISLATION WE HAVE PREPARED TO IMPLEMENT THE PROVISIONS OF ANNEX V OF MARPOL 73/78. THE COAST GUARD WILL BE PLEASED TO WORK WITH YOUR COMMITTEE ON SUGGESTED IMPLEMENTING LANGUAGE OR OTHER MATTERS RELATED TO ANNEX V. WE MAY WISH TO PROVIDE ADDITIONAL TECHNICAL COMMENTS AT SOME LATER DATE.

THANK YOU, MR. CHAIRMAN. I WOULD BE PLEASED TO ANSWER ANY QUESTIONS YOU OR MEMBERS OF THE COMMITTEE MAY WISH TO ASK.

STATEMENT OF
ERNEST J. CORRADO, PRESIDENT
AMERICAN INSTITUTE OF MERCHANT SHIPPING

BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
AND THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

SEPTEMBER 17, 1987

Good morning, Mr. Chairman, and members of the Subcommittee, I am Ernest J. Corrado, President of the American Institute of Merchant Shipping, commonly referred to as AIMS. AIMS is a national trade association representing the vast majority of the U.S.-flag bulk fleet and a sizable portion of the dry cargo fleet. We are pleased to present testimony on the topic of plastic pollution in the marine environment and proposed legislation to control the disposal of garbage in the ocean.

Refuse, including plastics, in the marine environment is generated from a variety of sources. These sources include careless beach users, refuse disposed into rivers and streams which empty into the ocean, and from offshore sources. Offshore sources include private merchant vessels, public government vessels, fishing vessels, vessels engaged in offshore oil and gas activities, recreational boat users, and in some areas, municipalities. With the variety of contributors to the problem, we cannot accept the incredibly high estimates of the waste problem which some have attributed to commercial merchant vessels. In the mid-1970's, there were approximately 65,000 vessels over 100 gross tons in the world fleet. Today there are approximately 75,000. Of those, the vessels most probable to be engaged in deep sea trade, those over 1000 gross tons, numbered 23,000 in 1976 and number 25,000 now. The vast majority of vessels, which are the smaller vessels, would be expected to ply their trade, be it commercial, fishing, or recreation, near the shore where waste thrown overboard has the greater likelihood of ending up on beaches. For commercial merchant vessels the amount of garbage, including plastics, generated during a voyage depends on the type of vessel, the trade route, the length of voyage, the size of crew, shore facilities available to vessels in ports of call, and the facilities the vessel may have onboard to handle garbage. With respect to crew size, we believe that, for unrelated reasons, commercial merchant ships have lessened the amount of waste generated aboard ship. For commercial reasons, crew sizes have shrunk. Since the 1970's, we would estimate that vessels average a one-third crew size reduction based on job rationalization and redundant and automated equipment. However, while difficult to estimate amounts, it is not difficult to estimate and observe the harmful effects any plastics discarded in the oceans may have on the marine environment. American-flag shipowners support the fact that oceans and waterways should be free of these harmful plastics as, indeed, would anyone of reason. We believe this position should be mirrored by all parties who contribute to refuse in the oceans.

Historically, commercial merchant vessels have disposed of their garbage at sea in compliance with existing laws. Existing U.S. law under the Refuse Act of 1899 (33 USC 407) prohibits the disposal of any refuse matter, including plastics, from any source into the navigable waters of the United States, including the territorial seas. Generally, aboard merchant vessels on the high seas, wastes generated as a result of vessel operations and deck maintenance is disposed of directly overboard. Any of these materials which are non-plastic will sink or degrade in a short time. Wastes generated from the vessel's hotel areas (i.e. galley, crew accommodations, crew lounges, and dining rooms) are normally stored in sealed drums and placed in a garbage stowage area. The garbage is then discharged at sea through a disposal chute from the garbage stowage area or from the stern of the vessel. This must be done at regular intervals since garbage retained on board can quickly become unsanitary and even present a fire hazard. Again, materials which are non-plastic will sink or degrade and food wastes provide meals to marine life. It is common to have birds, marine mammals and fish follow vessels on their voyages to take advantage of these discharges. Recently, some vessels have installed incinerators which, among other applications, can be used for the disposal of vessel garbage. Other vessels, primarily those with restrictions on the amount of garbage which can be retained onboard or which operate in restricted disposal areas, have installed trash compactors and some vessels which must handle large amounts of hotel wastes have installed comminuters or grinders for more efficient disposal.

AIMS believes that since plastics are introduced into the marine environment from a variety of sources, both national and international, any ultimate solution to the problem must encompass every party contributing to the problem. We believe the solution for the commercial maritime industry must be international. Specifically, we believe the solution is Annex V of the International Convention for the Prevention of Marine

Pollution referred to as MARPOL. Virtually every aspect of the operations of vessels engaged in foreign commerce is subject to international regulation by the conventions of the International Maritime Organization (IMO). In addition, the U.S. laws and regulations governing vessels in domestic commerce are equal to the IMO conventions. MARPOL, which was drafted by the Marine Environmental Protection Committee of the IMO and adopted in 1973 then revised in 1978, has five annexes. Annex I controls bulk oil pollution and Annex II covers bulk chemical pollution from vessels. Annexes I and II were required to be accepted by nations as they ratified MARPOL while the remaining three were designated optional annexes. Annexes I and II are now in force internationally and have been incorporated into U.S. domestic law and regulations. The U.S. Coast Guard enforces the requirements on U.S.-flag vessels and on foreign-flag vessels within our territorial waters pursuant to the treaty.

As you are aware, Mr. Chairman, on February 9, 1987, the President transmitted Annex V to the Senate for its advice and consent to ratification. AIMS supports Senate ratification. AIMS has previously testified in support of Annex V before the House Subcommittees on Fisheries and Wildlife Conservation and the Environment, Coast Guard and Navigation, and Oversight and Investigations of the Committee on Merchant Marine and Fisheries, and before the Senate Committees on Commerce Science and Transportation, and National Ocean Policy Study. Once adopted,Annex V will apply to all ships. It will prohibit the disposal into the sea of all plastics, including synthetic ropes, synthetic fishing nets, and plastic garbage bags. Also, dunnage, lining, and packing materials which will float cannot be disposed of within 25 nautical miles of the nearest land and all other garbage including food wastes, paper products, rags, glass, metal and similar refuse cannot be disposed of within 12 nautical miles of the nearest land. In addition, governments are required to ensure that ports and terminals maintain facilities for the reception of garbage from vessels.

Annex V will enter into force twelve months after the date on which at least fifteen nations representing fifty (50) percent of the gross tonnage of the world's merchant shipping ratify the treaty. Presently, 27 nations representing nearly 48 percent of the world's tonnage have ratified the annex. Ratification by the United States would add approximately 4 percent to the tonnage figure and bring the Convention into force. We are greatly encouraged by the rate in which the Senate ratification process is proceeding. In July of this year the Senate Committee on Foreign Relations concluded hearings on Annex V ratification. Also, the House has concluded hearings on implementing legislation and it appears that the appropriate Senate committees are nearing the conclusion of hearings on implementing legislation. It is our belief that Annex V, along with requirements which include a variety of compliance mechanisms, and enforcement through reasonable practices that encourage compliance on vessels of all nations, will have the desired result of eliminating the disposal of unacceptable plastics from ships.

Mr. Chairman, I would now like to address my comments as to how we believe that Annex V can be most effectively enforced and to the proposed legislation to implement Annex V.

We support the intent of all Senate bills, including S. 560, S. 633, and S. 1562, which provide for the implementation of Annex V of MARPOL. With respect to legislation implementing Annex V, we believe that Annex V should be incorporated into U.S. law by amending the Act to Prevent Pollution from Ships, APPS, (33 U.S.C. 1901 ET SEQ). The Act already provides the legal structure within U.S. statutes for implementing the MARPOL Annexes. While the Act specifically implements Annexes I and II of MARPOL, the legislation provides provisions for definitions, administration and enforcement, issuance and maintenance of certificates, reception facilities, reporting incidents, violations, amendments to MARPOL, legal actions, and the authority of the Secretary. These provisions are necessary for the successful implementation and enforcement of Annex V. We believe particularly that it is important for the U.S. Coast Guard to prescribe the implementing regulations and enforcement procedures for Annex V as called for in the Act. On July 22, 1987, the Secretary of Transportation transmitted to the speaker of the House proposed legislation to implement the provisions of

Annex V of MARPOL. Subsequently, Senator Stevens introduced the proposed legislation as S. 1562, and Senator Chafee amended his original bill, S. 560, to reflect the administration's proposed legislation. The administration's proposal, as now contained in S. 560 and S. 1562, does the above in an appropriate manner. We have supported Annex V with the understanding that its requirements would be placed equally on vessels of all nations without placing the U.S. fleet at a further competitive disadvantage. United States-flag compliance with the Annex of itself will not solve the problem of plastics in our oceans.

We believe that legislation creating plastic pollution control measures for private commercial and recreational vessels should provide that upon U.S. ratification of Annex V the provisions of the Annex be incorporated into existing U.S. law within a reasonable time period, and that the Secretary of the Department in which the Coast Guard is operating prescribe regulations to carry out the provisions of Annex V. Again, S. 560 and S. 1562 accomplish this. We cannot support legislation which would extend U.S. jurisdiction to foreign vessels within or beyond the exclusive economic zone (EEZ) of the United States for violations of the prohibition on the disposal of plastics. The MARPOL Convention contains specific regulations on enforcement which apply to all Annexes. The procedures call for state enforcement of the regulations on its vessels in all waters and on all vessels within the state's territorial seas. Violations outside a state's territorial seas are to be reported to the flag state for action. We believe that if this procedure is not adhered to in enforcement of Annex V, other nations may be discouraged from ratification and there may be further implications with respect to Annexes I and II. In addition, U.S.-flag vessels could face complications in foreign ports for reported violations. S. 560 and S. 1562 provide for enforcement as currently contained in APPS and MARPOL. The proposed legislation would also subject ships of countries which are not party to Annex V of MARPOL, to Annex V based standards while they are in the navigable waters and EEZ of the United States. We believe this to be a reasonable approach. We would also support U.S. policing action on all vessels within the EEZ although we feel that port state action in that area would have negative results.

With respect to S. 633, first, we suggest that Title II be amended to incorporate the Administration's legislative proposal. Second, we believe that Title III should be amended to make clear that Annex V, as contained in APPS, is the controlling statute for all ships, especially for vessels engaged in international and interstate commerce. Third, we suggest that Title I, section 102, be amended in such a way that it would apply to any source other than a ship or vessel. As we have noted, Annex V will apply to all ships. Covering vessels under this section would be duplicative and confusing if Annex V is implememted in Title II. However, we believe that this section could be useful in controlling plastics from sources other than ships, such as municipal runoff, which we believe contributes greatly to the problem. It should also be made clear that the enforcement and penalty provisions in sections 104, 105, and 106 apply only to these other sources and that enforcement and penalties for ships are contained in APPS as implemented in Title II.

We would now like to comment on the enforcement aspects of Annex V. There have been many questions raised concerning how Annex V can be most effectively enforced. As we have stated, for this treaty to have the desired effect of eliminating plastics from our oceans, the enforcement methods should encompass all parties responsible for the problem, and should encourage compliance with the treaty. With respect to the commercial maritime industry there are a number of enforcement components. First, we believe that the training of merchant vessel crews in proper garbage handling, the provisions of Annex V, and the effects of plastics on the marine environment, will be an important aspect of compliance. Under the International Treaty that sets requirements for the training of merchant crews, the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers, 1978 (STCW), both officers and unlicensed seamen must show knowledge of international pollution regulations and protection of the marine environment. Once Annex V is ratified, its provisions will become part of the required training. The STCW treaty has not yet been ratified by the U.S. although our training in this country includes all pertinent aspects of pollution prevention. In renewing their licenses and for upgrading, officers are required to take a test in marine environmental protection. The Coast Guard could add aspects of Annex V to that test when the Annex comes into force.

Second, vessels must have flexibility in compliance methods. These methods, which may include minimizing the amount of potential garbage, onboard handling procedures, onboard processing equipment, and disposal ashore, will vary among the many types of vessels and may vary aboard the same vessel depending on the nature of the voyage. While maintaining that flexibility, a ship or company should have a plan for how Annex V waste will be handled. It should be recognized that plastics cannot be thrown into the sea and must be disposed of by incineration at sea or discharging in port to reception facilities.

Third, we believe that the availability of shoreside reception facilities for Annex V waste to be absolutely essential for the successful implementation of Annex V. The Act to Prevent Pollution from Ships and Coast Guard regulations for Annexes I and II provide a legal foundation for ensuring facilities are available. Reception facility regulations are in place for oil and chemical wastes and the Coast Guard is reporting a very high compliance rate. Reception facilities meeting Department of Agriculture Regulations can be made available through the same procedures. In using the word "facilities," with respect to garbage, we recognize that government approval could be granted to presently operating commercial waste handlers. However, the government must ensure that facilities established will take vessel garbage under all circumstances. One only needs to recall our infamous garbage barge ordeal to foresee potential problems. Yet we are hopeful that marketplace and government requirements will alleviate such problems. Any charge for use of facilities should be borne by the user, not by a general charge assessed on all vessels. If facilities are recognized, the market place will provide the competition to keep costs in line and acceptable to vessel owners. We believe that the proposed changes to APPS and anticipated Coast Guard regulations will ensure the availability of shoreside facilities.

Fourth, we propose that placards pertaining to Annex V regulations and garbage dumping restrictions be placed aboard vessels. This will serve as a reminder to vessel's crews and supplement training requirements. Fifth, we propose that when vessel garbage is discarded, a logbook entry be made attesting that the disposal was made in compliance with Annex V regulations. The logbook can be made available to the Coast Guard and Department of Agriculture during routine vessel boardings. Logbooks are an integral and traditional part of the maritime industry. They provide evidence of compliance with many other laws and regulations including environmental and safety measures. They establish a record, are completed by licensed individuals who place their license in jeopardy for false entries, and can be relied on in this matter.

We feel that the above noted enforcement aspects are reasonable and will be complied with to the benefit of cleaner oceans. One idea we have heard discussed, which is enforcement based on mandatory presentation of garbage before a shore-side overseer, will in our opinion, engender non-compliance leading to deliberate contravention of Annex V. In addition, we suggest that the enforcement requirements be placed in regulation rather than legislation so they can be revised more easily, if necessary, to ensure the Annex provides the intended results.

Lastly, Mr. Chairman, we have a major concern. In the first part of our testimony, we noted the unfair, and we believe grossly inaccurate, characterization of commercial maritime vessels as the primary source of pollution. We are less interested in disavowing those who hold this view than we are in reducing our contribution to the problem. We help make the mess so we'll help clean it up. But what about the other contributors? As one small example, we recently witnessed, in the Houston ship channel after a downpour, literally thousands of styrofoam containers in the channel from municipal run-off. The sad fact is those containers will not degrade for many years. It is also sad that as commercial merchant ships are identified as the primary contributor to beach waste now, no matter what alleviation of our contributed portion we attain, the criticism of commercial merchant vessels as the prime culprit will not diminish. Therefore we would support a legislatively mandated monitoring group to periodically review the entire question of trash pollution. Those with interests in the matter, such as shipowners, environmentalists, state authorities, federal government authorities, fishing, and recreational boaters, would be a part of the group. We believe this would give us, the commercial maritime interests, a forum to discuss our activities and reduce unfair attribution which would help perpetuate the problem rather than solve it.

Mr. Chairman, we have a common goal to rid our waters and beaches of plastic pollution. We appreciate this opportunity to testify and we look forward to continuing to work with you and the Subcommittee to accomplish our goal. Thank you.

STATEMENT OF

ERIK STROMBERG

FOR THE

AMERICAN ASSOCIATION OF PORT AUTHORITIES

BEFORE

THE SUBCOMMITTEE ON ENVIROMENTAL PROTECTION

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

SEPTEMBER 17, 1987

GOOD MORNING MR. CHAIRMAN AND DISTINGUISHED MEMBERS OF THE COMMITTEE. MY NAME IS ERIK STROMBERG. I AM PRESIDENT OF THE AMERICAN ASSOCIATION OF PORT AUTHORITIES. THANK YOU FOR THE OPPORTUNITY TO TESTIFY TODAY. AAPA SHARES YOUR CONCERN FOR SOLVING THE SERIOUS POLLUTION PROBLEM THAT IS THE SUBJECT OF TODAY'S HEARING.

ORGANIZED IN 1912, AAPA REPRESENTS VIRTUALLY ALL OF THE PUBLIC PORT AUTHORITIES IN THE UNITED STATES AS WELL AS THE MAJOR PORT AGENCIES IN CANADA, LATIN AMERICA, AND THE NATIONS OF THE CARIBBEAN SEA. IN GENERAL, PUBLIC PORT AUTHORITIES ARE CREATED BY STATES OR LOCAL GOVERNMENTS TO FACILITATE INTERNATIONAL TRADE AND TO STIMULATE ECONOMIC DEVELOPMENT IN THE REGIONS THEY SERVE. AAPA-MEMBER PUBLIC PORT AUTHORITIES OWN TERMINALS WITH DEEP WATER ACCESS TO THE OCEAN. IN SOME CASES, THE AUTHORITY EMPLOYS ITS OWN WORK FORCE AND OPERATES THE TERMINAL. IN OTHERS, TERMINALS ARE LEASED TO PRIVATELY-OWNED TERMINAL OPERATING COMPANIES OR STEVEDORES. IN ALL HARBOR AREAS OF THE UNITED STATES, THERE ARE MANY PRIVATELY-OWNED TERMINALS SERVING OCEAN-GOING VESSELS THAT ARE OUTSIDE OF THE PORT AUTHORITY'S JURISDICTION.

SIMILAR TO ANNEXES I AND II OF THE TREATY, ANNEX V OF THE CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL 73/78) STATES THAT "GOVERNMENTS OF EACH PARTY TO THE CONVENTION (SHALL) UNDERTAKE TO ENSURE THE PROVISION OF FACILITIES AT PORTS AND TERMINALS FOR THE RECEPTION OF GARBAGE, WITHOUT CAUSING UNDUE DELAY TO SHIPS." MR. CHAIRMAN, BECAUSE PLASTICS

POLLUTION IS CLEARLY AN INTERNATIONAL PROBLEM IN NEED OF AN INTERNATIONAL SOLUTION, WE SUPPORT THE IMPLEMENTATION OF ANNEX V AS THE BEST AVAILABLE MEANS OF CURTAILING HARMFUL WASTE DISPOSAL IN THE OCEAN. OUTLAWING THE DISPOSAL OF PLASTICS AT SEA WITH SANCTIONS WITH FOR FAILURE TO COMPLY SHOULD PROVIDE THE NECESSARY INCENTIVES FOR THE REEVALUATION OF THE USE OF SUCH MATERIALS IN VESSEL OPERATIONS. IN GENERAL, I BELIEVE THAT IMPROVED HANDLING OF WASTES ON BOARD VESSELS WHERE IT IS GENERATED WILL LEAD TO THE MOST EFFECTIVE AND EFFICIENT MEANS OF DISPOSAL. IN ADDITION, ANY MANDATED SOLUTION SHOULD BE FLEXIBLE ENOUGH TO TAKE INTO CONSIDERATION THE WIDE RANGE OF LOCAL CIRCUMSTANCES AND CONDITIONS.

UPON IMPLEMENTATION OF ANNEX V, ONE WOULD EXPECT AN INCREASED DEMAND FOR WASTE DISPOSAL SERVICES IN PORT, BUT THERE IS NO GUARANTEE THAT THIS WILL BE THE CASE. RECEPTION FACILITIES FOR "UNCONTAMINATED" TRASH, PLASTICS, AND DUNNAGE ARE GENERALLY AVAILABLE AT U.S. PORTS. HOWEVER, THERE IS A COMPLICATING FACTOR FOR GARBAGE OF FOREIGN ORIGIN BEING DISCHARGED IN A UNITED STATES PORT. DISPOSAL OF GARBAGE CONTAINING FOREIGN ANIMAL OR VEGETABLE MATTER IS REGULATED BY THE U.S. DEPARTMENT OF AGRICULTURE'S ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS). APHIS REQUIRES THIS MATTER TO BE BURNED IN AN APPROVED INCINERATOR (ONE THAT DESTROYS ALL ORGANISMS), OR TO BE STERILIZED BEFORE BEING PLACED INTO A LOCAL LANDFILL. UNDER ANNEX V, GARBAGE MAY BE DUMPED OFFSHORE AT SPECIFIED DISTANCES, WHICH WILL LIKELY PROVE TO BE A FEASIBLE AND APPROPRIATE OPTION TO THE VESSEL OPERATOR, AND WHICH WILL LIKELY DIMINISH THE DEMAND FOR APHIS-APPROVED DISPOSAL FACILITIES. THE PROBLEM, IN TERMS OF THE AVAILABILITY OF SUCH APHIS-APPROVED RECEPTION FACILITIES, WILL BE MADE MORE ACUTE IF THERE ARE SIGNIFICANT VOLUMES OF

TRASH, ESPECIALLY PLASTICS, THAT ARE "CONTAMINATED" BY APHIS-REGULATED GARBAGE AND PRESENTED AT THE PORT FOR DISPOSAL.

IN ORDER TO ASSESS THE EXISTING AVAILABILITY OF WASTE DISPOSAL FACILITIES NEAR PORTS, WE SURVEYED OUR MEMBERSHIP. THE PRIMARY INFORMATION SOUGHT WAS THE AVAILABILITY OF FACILITIES FOR DISPOSING APHIS-REGULATED WASTE. THE RESULTS OF OUR SURVEY INDICATE THAT APPROXIMATELY 60 PERCENT OF AAPA U.S.-MEMBERS HAVE FACILITIES WHICH ARE CAPABLE OF HANDLING REGULATED WASTES AVAILABLE IN THEIR PORT AREAS. AT LEAST 70 PERCENT OF THESE FACILITIES ARE LOCATED WITHIN 10 MILES OF THE PORT. IN ADDITION, SEVEN RESPONDENTS (7) REPORTED THAT NEARBY INCINERATORS COULD POTENTIALLY BE APPROVED BY APHIS.

THE PROVISION OF VARIOUS SERVICES REQUIRED BY SHIPS IN PORT IS CURRENTLY HANDLED EITHER BY THE SHIP'S AGENT OR THE LOCAL OFFICE OF THE STEAMSHIP LINE. INCLUDED IN THE SERVICES PROVIDED ARE THE ARRANGEMENTS FOR SHIP WASTE REMOVAL. IN OUR SURVEY, 80 PERCENT OF THE PORT AUTHORITIES RESPONDING INDICATED THAT THEY EXPECT THESE SERVICES TO CONTINUE TO BE PROVIDED ENTIRELY BY THIRD PARTIES OTHER THAN THE TERMINAL OPERATOR. TWENTY PERCENT SAID THAT THE PORT AUTHORITY MAY PLAY SOME TYPE OF COORDINATING ROLE, BUT AGAIN, DID NOT SEE THEMSELVES INVOLVED FINANCIALLY OR OPERATIONALLY.

AMONG THE 40 PERCENT OF OUR MEMBERS THAT DO NOT PRESENTLY HAVE APHIS-APPROVED CAPABILITY ARE A FEW OF THE LARGER PORT AREAS IN THE COUNTRY. BUT, THE MAJORITY OF PUBLIC PORT AUTHORITIES WITHOUT AVAILABLE FACILITIES ARE OUR SMALLER MEMBERS WITH LIMITED FINANCIAL RESOURCES. IN SOME CASES, ESPECIALLY IN THE MORE URBAN AREAS WITHOUT FACILITIES, EFFORTS ARE ALREADY UNDERWAY TO BUILD AN INCINERATOR IN PROXIMITY TO THE PORT. BECAUSE OF THE

RELATIVELY HIGH COST OF PURCHASING AND OPERATING A STERILIZATION FACILITY THAT WOULD MEET APHIS APPROVAL, AND BECAUSE MOST OF THE PORTS WITHOUT NEARBY FACILITIES ARE SMALL, THE COAST GUARD SHOULD HAVE AS MUCH FLEXIBILITY AS POSSIBLE TO ENSURE THE LAW IS ENFORCED, AND TO GIVE NEEDED CONSIDERATION TO INDIVIDUAL CIRCUMSTANCES.

AS YOU KNOW, MR. CHAIRMAN, IT CAN BE EXTREMELY DIFFICULT TO SITE AND OBTAIN PERMITS FOR AN INCINERATOR. LOCAL CITIZENS WHO HAVE BEEN CONVINCED OF THE SAFETY OF A PLANT MAY, NEVERTHELESS, STILL OPPOSE A FACILITY THAT MAY DRAW TRAFFIC TO A COMMUNITY AND POSSIBLY LOWER PROPERTY VALUES. EVEN WHERE SERIOUS PLANS FOR A FACILITY HAVE LONG BEEN UNDERWAY, THE AVAILABILITY OF SUCH FACILITIES WITHIN A YEAR OF THE RATIFICATION OF ANNEX V OR ITS IMPLEMENTING LEGISLATION IS UNCERTAIN. THIS IS ANOTHER EXAMPLE OF WHY FLEXIBILITY IS NEEDED. FOR EXAMPLE, IT WOULD BE UNWISE FOR A PORT AUTHORITY OR TERMINAL OPERATOR TO INVEST IN A STERILIZATION DEVICE ONLY TO HAVE A MUNICIPAL RESOURCE RECOVERY PLANT COME ON LINE SHORTLY THEREAFTER.

MR. CHAIRMAN, I BELIEVE CREATIVE, COMMON SENSE SOLUTIONS THAT DO NOT NECESSARILY REQUIRE A HUGE CAPITAL EXPENDITURE ARE AVAILABLE. IMPLEMENTATION OF THE ANNEX V REGULATIONS WILL LIKELY STIMULATE EFFICIENT SOLUTIONS TO THE PLASTICS DISPOSAL PROBLEM, JUST AS THE ENFORCEMENT OF ANNEX I LED TO ADVANCES IN THE MANAGEMENT AND DISPOSAL OF OILY WASTES. IF SHIP OPERATORS CAN KEEP THEIR PLASTICS SEPARATED FROM MATERIAL THAT IS OF CONCERN TO APHIS, PORT AUTHORITIES AND TERMINAL OPERATORS SHOULD NOT HAVE MAJOR PROBLEMS COMPLYING WITH ANNEX V REQUIREMENTS. PLASTIC WASTES CAN BE DISPOSED OF IN THE SAME MANNER AS MOST TERMINAL TRASH. MORE IMPORTANTLY, HOWEVER, VESSEL OPERATORS WILL HAVE AN INCENTIVE TO LIMIT OR ELIMINATE NON-BIODEGRADABLE PACKAGING FROM

THEIR VESSEL STORES SINCE DISPOSAL SERVICES ARE COSTLY. FROM A REGULATORY STANDPOINT, IT MAY ALSO BE PRUDENT TO REVIEW APHIS REGULATIONS THAT PROHIBIT THE TRANSPORT OF REGULATED GARBAGE THROUGH RURAL AREAS. IT MAY BE FOUND THAT WITH CERTAIN STRICT PRECAUTIONS, SUCH TRANSPORT CAN BE SAFE, AND MIGHT PROVIDE THE MOST EFFICIENT ALTERNATIVE IN SOME PORT REGIONS.

IN CONCLUSION, MR. CHAIRMAN, OUR RESEARCH INDICATES THAT PRIVATE SECTOR WASTE MANAGEMENT COMPANIES WILL BE AVAILABLE IN THE MAJORITY OF PORT AREAS TO TRANSPORT CONTAMINATED WASTES TO AN APPROVED FACILITY. MANY COMPANIES HAVE ALREADY SHOWN INTEREST IN PROVIDING DISPOSAL SERVICES FOR WASTE AS REQUIRED BY ANNEX V. MOREOVER, AS I HAVE MENTIONED, THE ULTIMATE DISPOSAL OF GARBAGE AND TRASH, ESPECIALLY PLASTICS WILL BE GREATLY FACILITATED DEPENDING ON THE NATURE OF THE WASTE RECEIVED FROM THE VESSEL AND THE CONDITION IN WHICH IT IS RECEIVED AT THE TERMINAL (THAT IS, WHETHER OR NOT IT IS CONTAMINATED BY APHIS-REGULATED GARBAGE).

WHAT IS NEEDED IS AN EDUCATIONAL EFFORT TO INFORM OCEAN USERS WORLDWIDE ABOUT THE DANGERS THAT PLASTICS POSE TO THE ENVIRONMENT AND THE PENALTIES FOR VIOLATING ANNEX V'S REGULATIONS. THE PUBLIC PORT INDUSTRY RECOGNIZES THE SERIOUSNESS OF THIS PROBLEM AND STANDS READY TO ASSIST CONGRESS AND THE COAST GUARD TO FIND THE MOST EFFICIENT, COST-EFFECTIVE MEANS TO DISPOSE OF SHIP WASTES IN EACH LOCAL SITUATION.

THANK YOU AGAIN FOR THIS OPPORTUNITY TO PRESENT OUR VIEWS.

Waste Management, Inc.
Government Affairs Department
1155 Connecticut Avenue, N.W. Suite 800
Washington, D.C. 20036

STATEMENT OF DR. WILLIAM Y. BROWN
DIRECTOR OF GOVERNMENT AFFAIRS
WASTE MANAGEMENT, INC.

BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
UNITED STATES SENATE

September 17, 1987

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you today a give testimony on reducing plastic pollution in the marine environment and on implementation of MARPOL Annex V in particular.

Waste Management, Inc. ("WMI") is the largest municipal and industrial waste handling company in the world. We have more than 400 operating divisions located in 45 states from Key West to Portland, Maine, to Seattle, Washington, and we operate internationally on five continents. We manage essentially every kind of waste produced. WMI also provides a waste reduction service for hazardous waste generators, and currently manages about 140 solid waste recycling operations, including the largest private operation in the country for the residents of San Jose, California. We expect the number of WMI recycling operations to rise to 400 within the next year.

My testimony focuses on MARPOL Annex V. The Annex is a laudable initiative and we look forward to expeditious passage of strong implementing legislation. I will offer here some information and suggestions for that legislation which should help to make it an effective vehicle for limiting pollution of the sea by plastics and other trash discarded by ships.

My testimony will not address the on-going ocean dumping of municipal sewage sludges. However, I would like to point out to the Committee that my company operates many land-based treatment and disposal facilities in the Mid-Atlantic and Northeast regions of our country and we are prepared to assist you in any legislative review of land-based alternatives to ocean disposal.

The Problem

The Center for Environmental Education ("CEE") has summarized for the Committee current knowledge on discarded plastics in the sea and their impact on fish and wildlife and the environment. That impact is substantial and something should be done about it. Hundreds of thousands of sea birds, more than 100,000 marine mammals, sea turtles, and many other creatures die each year from entanglement in plastic nets and other debris. Some 50 species of sea birds and several sea turtle species are known to eat plastics debris, which can lead to starvation.

A three hour long Texas beach clean-up organized by the CEE produced 125 tons of trash from 122 miles of coastline--more than a ton per mile. Plastics made up 56 percent of the trash. I find it striking that ships apparently produced most of the trash removed from Texas beaches in the clean-up. Motorists in our society are obliged not to toss garbage from the windows of cars or trucks driving down the road. Captains and crews of ships, big and small, should observe a similar duty.

Waste in the sea is part of a larger problem of waste in our society. The statistics are staggering: each year the United States produces more than 250 million tons of hazardous waste; 136 million tons of municipal refuse; more than 10 billion tons of other solid waste, much discharged virtually without regulation into some 191,000 waste ponds scattered across the country; well over one trillion gallons of sewage; and some 433,000 55-gallon drums of commercial low-level radioactive waste. Other nations carry similar burdens. Unless managed properly, this waste can degrade environmental quality and cause disease. A brief description of keys problems created by these wastes is given in the attachment to this testimony.

Ship-generated wastes are a small volume of this larger problem, although they are acutely hazardous in the form of plastics that entangle marine organisms or fill their stomachs and particularly unattractive as persistent coastal debris.

The National Research Council has estimated that approximately 6.4 million metric tons of trash are discarded by ships at sea each year, about 45,000 tons of which are plastic. Statistics of the Department of Agriculture reviewed by Waste Management staff indicate that in FY 1986, 73,614 vessels entered U.S. ports, of which 50,049 originated in a foreign port. Of the 73,614 vessels arriving in U.S. ports, 1,832 off-loaded garbage and other ship wastes. The volume was approximately 9,000 metric tons, or about 5 tons per vessel. We do not know if these statistics are representative of larger ships generally. If they are, effective enforcement of Annex V may generate at U.S. ports in the neighborhood of one-quarter of a million tons of waste from larger ships per year. The amount will be reduced to the extent that ship-board incinerators are put into operation or that non-plastics are separated from trash and dumped at sea. The amount will be increased to the extent that recreational boaters bring trash to port.

Regulation and Waste Management

The Agriculture Department requires off-loaded foreign garbage to be removed under the direction of an Animal and Plant Health Inspection Service ("APHIS") inspector "to an approved facility for incineration, sterilization, or grinding into an approved sewage system" (9 Code Fed. Reg. 94.5 (b) (1)), or for other handling approved by APHIS. My discussions with APHIS staff indicate that off-loading of garbage containing plastics will be allowed only if the garbage is incinerated or sterilized. Sterilization is defined as "cooking garbage at 212 degrees F. for 30 minutes and disposal of the residue by burying in a landfill..." APHIS generally does not allow raw garbage to be transported through rural areas for ultimate incineration, although I understand that exceptions are sometimes made, nor does APHIS allow just any incinerator to be used--they require demonstration of a thorough burn.

Despite these Agriculture Department requirements, I believe that the ports and ship owners and operators can count on our company and others as willing and able commercial partners for proper treatment and disposal of waste off-loaded at most ports. Many of the major ports already have access to facilities that should be adequate. For those that do not, it should be possible to site incinerators or sterilizers of some kind, although incineration is controversial and siting is typically protracted.

It should be generally feasible to establish and operate facilities without underwriting from the federal government. In some cases, on the other hand, ports or some form of appropriate local government may facilitate siting of facilities by serving as coordinator or sponsor. The statement of purpose and need which accompanies the Administration legislation states that the proposal has "potential cost implications to both the Federal government and private industry." We have no quarrel with that statement, except to observe that the proposal also has revenue implications for the pollution-control industry; including WMI in particular.

Incineration at existing municipal facilities is likely to be less expensive than incineration or sterilization at new facilities placed at ports for this purpose.

Furthermore, remote ports present a special problem because the volume of garbage may not justify commercial investment in new facilities. For this reason, it might be wise for the Agriculture Department to authorize waste transport through rural areas if necessary to reach an existing incinerator. The Department could require any appropriate measures necessary to ensure that the domestic or wild animals will not gain access to the trash. The EPA and Department of Transportation currently oversee detailed requirements for transportation of hazardous waste and product chemicals. Agriculture could draw on those programs to the extent necessary. It should be easier to keep pigs out of the trash than hydrofluoric acid out of the air.

Enforcement

Enforcement, in my view, is the key variable on which the success of MARPOL Annex V will stand or fall. Unless enforcement is effective, I am concerned that many will dump trash at sea because of convenience and cost.

I believe that MARPOL implementing legislation should give the Agriculture Department a mandated role in enforcement of the law. I understand that Agriculture currently inspects virtually all off-loaded foreign garbage whereas this would be a new task for the Coast Guard--one in which they have had little experience and which would compete with other priority activities, such as drug trade control. Nothing is more important to Agriculture's APHIS bureau than preventing introduction of foreign disease-carrying biotics.

At a minimum, it would seem absolutely necessary for records to be kept of trash discharges. A log could be kept for this purpose. The log would be used for rough statistical information and enforcement. An experienced APHIS or Coast Guard inspector might review logs most closely when little or no trash is off-loaded. If the records look odd in light of the particular circumstances, the inquiry could go further. If significant penalties are provided in this implementing legislation for falsification of the logs, or negligence in record-keeping, then deterrence exists. To be effective, a log-keeping requirement must apply to foreign as well as domestic vessels using U.S. ports.

Public Vessels

Except perhaps during genuine military emergencies, I believe that implementing legislation should require public vessels to observe standards of trash disposal no less strict than those required for private vessels. Although the MARPOL treaty provides an exemption for these vessels, stricter domestic measures are authorized. It is difficult to understand how sound trash management by U.S. public vessels could be incompatible with preparedness for battle. Compactors and incinerators are the obvious available tools for compliance with a plastics discharge prohibition. They are the tools that will be used by many private vessels, including cruise ships with high densities of people. It simply is not necessary for aircraft carriers in routine operations to toss plastic garbage bags off the fan-tail every day at dusk. Public trash looks just as bad as private trash when it floats up on our beaches.

Public Education

Public education is critical to making MARPOL Annex V work. Many recreational boaters probably will not even be aware of the law unless a major education effort is launched. NOAA already is undertaking a solid public education effort in conjunction with the Center for Environmental Education. This should continue. I also commend to you the Center's recommendation for MARPOL Annex V notices on larger ships and at ports, paralleling notices currently required for oil.

Thank you for the opportunity to give this testimony.

Attachment

THE WASTE PROBLEM

Without sophisticated management under strict environmental laws and enforcement, the waste produced by our society can degrade environmental quality and cause disease.

I. Millions of tons of waste are produced each day in the United States alone. The statistics are staggering: each year our country produces more than 250 million tons of hazardous waste; 136 million tons of municipal refuse; more than 10 billion tons of other solid waste, much discharged into waste ponds on the properties of industrial plants; well over one trillion gallons of sewage; and some 433,000 55-gallon drums of commercial low-level radioactive waste. Other nations carry a similar burden.

II. Unless managed properly, this waste can degrade environmental quality and cause disease.

Solid Waste

° Unregulated disposal of refuge, still occurring in parts of the world, can give rise to visual pollution, unpleasant odors, hordes of flies, other insects, rodents, and disease. Historically, the Black Plague was fueled by unsafe waste disposal and killed one half of the 120 million people in Europe.

° Open burning at disposal sites is still widespread in the developing world and was practiced widely in the United States until the last few decades. This burning reduces volume and suppresses disease-carrying organisms, but causes excessive air pollution.

° Even in the United States, current disposal practices remain less than perfect, despite well understood tools for preventing harm to the environment. Recent EPA statistics show that most solid waste landfills still lack systems for determining whether any groundwater contamination is occurring. Some landfills accept liquid wastes and others make little or no effort to identify hazardous wastes that should not be accepted. Industrial waste ponds are worse. The 191,000 waste ponds in the United

States typically were sited and designed without particular regard for potential groundwater contamination and lack groundwater monitoring systems. Unlike landfills, these on-site solid waste ponds are virtually unregulated. They are, quite simply, out-of-sight and out-of-mind.

Sewage

° Untreated discharge of municipal sewage remains one of the developing world's greatest threats to human health and the environment. Diseases are transmitted through contaminated drinking water and aquatic ecosystems can be altered or destroyed. Organic matter, for example, can lead to oxygen depletion in rivers and lakes, and nitrogen and phosphorus stimulate algal growth. Systems are available for sound treatment of sewage and waste waters and are in place in the United States. Even here, however, these facilities are not always well operated and maintained.

Hazardous Wastes

° Certain wastes present special hazards and must be managed with great care. Best known of these are chemicals that are thought to cause cancer (e.g., dioxins, PCBs, DDT) or developmental defects (e.g., lead). Hazardous wastes also include materials that readily ignite (e.g., residues from dynamite manufacture), that are corrosive (e.g., acids and bases used in industry), or that are reactive (e.g., certain acids that react violently on contact with water).

° Compounding the problem of safely managing hazardous waste produced today is the legacy of past mismanagement. Thousands of abandoned sites, such as Love Canal and the Stringfellow Acid Pits, dot our country from coast to coast and require clean-up. In some developing countries without strong environmental laws, these sites are being created unchecked.

° Although very strict hazardous waste laws are in force in the United States, lack of regular and comprehensive inspection and enforcement undermines their effectiveness. Some facilities have never even been visited by a government inspector; few have been subject to detailed scrutiny. Furthermore, illegal "midnight dumping" is a regular occurrence.

Radioactive Wastes

° Radioactive wastes are produced by weapon development and production, nuclear power plants, hospitals, research laboratories, and various industries. Excessive exposure can cause reddening of the skin, loss of hair, damage to blood-forming organs, genetic changes, malignancies, and reduced fertility and life span. High level radioactive wastes are managed by the federal government in the United States; highly regulated private management is allowed for low-level wastes. Sound containment and monitoring technology is in use at private sites, but only three such sites are operational nationwide and political controversy dogs them. In 1979, governors of the three states involved announced closing or restricted use of these sites. These strictures were lifted only after certain hospitals and laboratories announced that nuclear medicine and laboratory services would be halted.

STATEMENT OF
TUDOR T. DAVIES
DIRECTOR
OFFICE OF MARINE AND ESTUARINE PROTECTION
U.S. ENVIRONMENTAL PROTECTION AGENCY
TO THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

September 17, 1987

I AM TUDOR T. DAVIES, DIRECTOR OF THE OFFICE OF MARINE AND ESTUARINE PROTECTION OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY. IT IS A PLEASURE TO BE HERE TODAY TO TESTIFY BEFORE YOU ON ISSUES RELATED TO PLASTIC DEBRIS IN THE MARINE ENVIRONMENT AND PROPOSED LEGISLATION TO DEAL WITH THIS PROBLEM.

BEFORE TURNING TO THE SPECIFIC ISSUES RAISED IN YOUR AUGUST 19, 1987 LETTER OF INVITATION, I WOULD BRIEFLY LIKE TO ACQUAINT YOU WITH ONE OF THE RESPONSIBILITIES OF OUR OFFICE WITH REGARD TO MARINE POLLUTION. THE OFFICE OF MARINE AND ESTUARINE PROTECTION IS THE AGENCY OFFICE CHARGED WITH IMPLEMENTATION OF THE OCEAN DUMPING ACT, WHICH APPLIES TO TRANSPORTATION OF MATERIALS FOR THE PURPOSE OF OCEAN DUMPING. THE OCEAN DUMPING ACT, AMONG OTHER THINGS, SERVES TO IMPLEMENT THE LONDON DUMPING CONVENTION, AN INTERNATIONAL TREATY TO WHICH THE U.S. IS A SIGNATORY. ANNEX I OF THAT CONVENTION INCLUDES A PROHIBITION AGAINST THE OCEAN DUMPING OF PERSISTENT PLASTICS OR SYNTHETIC MATERIALS WHICH MAY FLOAT OR REMAIN IN SUSPENSION SO AS TO INTERFERE WITH LEGITIMATE USES OF THE SEA. CONSISTENT WITH

THAT PROHIBITION, THE AGENCY DOES NOT ISSUE PERMITS AUTHORIZING THE TRANSPORTATION OF PLASTIC MATERIALS FOR THE PURPOSE OF OCEAN DUMPING. WHERE MATERIALS WHICH HAVE RECEIVED OCEAN DUMPING ACT PERMITS MAY INCIDENTALLY CONTAIN A PLASTIC COMPONENT, THE PERMIT TERMS ARE DRAFTED SO AS TO PROHIBIT THE DISPOSAL OF THOSE PLASTICS.

SINCE ENACTMENT OF THE OCEAN DUMPING ACT IN 1972, THERE HAS BEEN A SIGNIFICANT DECLINE IN THE NUMBER OF INDUSTRIAL WASTE DUMPERS AND THE AMOUNT OF INDUSTRIAL WASTE BEING DUMPED. WHILE THERE ALSO HAS BEEN A DECLINE IN THE NUMBER OF SEWAGE SLUDGE DUMPERS, THE ACTUAL VOLUME OF SLUDGE BEING DUMPED HAS INCREASED DUE TO IMPROVEMENTS IN SEWAGE TREATMENT FACILITIES. HOWEVER, OVER THE LAST SEVERAL YEARS THE DUMPING VOLUME HAS REMAINED RELATIVELY LEVEL. THE SEWAGE SLUDGE DUMPING WHICH IS NOW TAKING PLACE IS LIMITED TO NEW YORK AND NEW JERSEY MUNICIPALITES AND IS TAKING PLACE UNDER COURT ORDER.

WE BELIEVE THE OCEAN DUMPING ACT AND THE LONDON DUMPING CONVENTION EFFECTIVELY ADDRESS THE TRANSPORTATION OF MATERIALS FOR PURPOSES OF OCEAN DUMPING, AND DO NOT BELIEVE THAT SUCH DUMPING AS MAY BE AUTHORIZED UNDER THOSE AUTHORITIES RESULTS IN SIGNIFICANT CONTRIBUTION OF PLASTICS INTO THE MARINE ENVIRONMENT. HOWEVER, PLASTICS ARE A VIRTUALLY UBIQUITOUS MATERIAL IN OUR MODERN SOCIETY AND CAN FIND THEIR WAY INTO THE MARINE ENVIRONMENT FROM A NUMBER OF OTHER SOURCES, SUCH AS DISPOSAL OF WASTE GENERATED BY THE OPERATION OF VESSELS, ACCIDENTAL

LOSS, RECREATIONAL VESSELS, AND NON-MARINE SOURCES SUCH AS STORM WATER RUN-OFF AND COMBINED SEWER OVERFLOWS IN URBAN AREAS. BECAUSE OF THIS, AND BECAUSE OF THE ADVERSE IMPACTS OF PLASTIC DEBRIS ON MARINE LIFE AND ESTHETICS, WE REMAIN CONCERNED ABOUT THE EFFECTS OF PLASTIC POLLUTION ON THE MARINE ENVIRONMENT.

I AM PLEASED TO HAVE THE OPPORTUNITY TO DISCUSS THIS IMPORTANT ISSUE WITH YOU AND THE VARIOUS SUBJECT AREAS RAISED IN YOUR LETTER OF INVITATION. THE REMAINDER OF MY TESTIMONY WILL ADDRESS THE 7 SPECIFIC ISSUES RAISED IN YOUR LETTER OF INVITATION AS WELL AS COMMENT ON VARIOUS ASPECTS OF SENATE BILLS S. 559, S. 560 AS AMENDED, AND S. 633.

Need to Identify Plastic Products Causing Adverse Effects

THE FIRST ISSUE RAISED BY YOUR AUGUST 19, 1987 LETTER OF INVITATION WAS THE NEED TO IDENTIFY SPECIFIC PLASTIC PRODUCTS WHOSE USE, MISUSE, OR IMPROPER DISPOSAL CAUSE SIGNIFICANT ADVERSE EFFECTS IN THE MARINE ENVIRONMENT.

AS PART OF OUR EFFORTS TO GAIN A BETTER UNDERSTANDING OF THE SIGNIFICANCE OF THE MARINE PLASTIC DEBRIS PROBLEM, THE AGENCY FUNDED A STUDY BY THE CENTER FOR ENVIRONMENTAL EDUCATION. AMONG OTHER THINGS, THAT STUDY REVIEWED AND DISCUSSED THE TYPES OF PLASTIC DEBRIS FOUND IN THE MARINE ENVIRONMENT. THE STUDY INDICATES THAT A WIDE VARIETY OF PLASTIC MATERIALS CAN FIND THEIR WAY INTO THE MARINE ENVIRONMENT, RANGING FROM RAW PLASTIC PELLETS TO FINISHED MANUFACTURED PRODUCTS, SUCH AS BOTTLES, PLASTIC SHEETING, PACKING MATERIALS, AND FISHING

NETS. ANOTHER REPORT BY THE CENTER FOR ENVIRONMENTAL EDUCATION, BASED ON THE RESULTS OF A BEACH CLEAN-UP CAMPAIGN ALONG THE TEXAS COAST, ALSO INDICATED A WIDE VARIETY OF PLASTIC MATERIALS HAD WASHED UP ON THE BEACHES. IN ADDITION, THESE REPORTS SUGGEST THAT THE NATURE AND TYPE OF PLASTIC DEBRIS FOUND IN THE MARINE ENVIRONMENT VARIES DEPENDING ON REGIONAL FACTORS. FOR EXAMPLE, IN ALASKAN WATERS, THERE ARE MORE FREQUENT FINDINGS OF LOST OR ABANDONED FISHING GEAR.

THE IMPACTS OF PLASTIC DEBRIS ON THE ENVIRONMENT CAN INCLUDE ADVERSE EFFECTS ON MARINE LIFE DUE TO INGESTION OR ENTANGLEMENT AND ADVERSE EFFECTS ON ESTHETIC VALUES, SUCH AS THE PRESENCE OF PLASTIC POLLUTION ON SHORELINES AND BEACHES. THE NATURE OF THE IMPACT WILL VARY DEPENDING ON THE TYPE OF PRODUCT INVOLVED. FOR EXAMPLE, IMPROPERLY DISCARDED PACKAGING MATERIALS SUCH AS STRAPPING BANDS OR PLASTIC SIX PACK RINGS HAVE THE POTENTIAL FOR CAUSING ENTANGLEMENT PROBLEMS FOR MARINE BIRDS AND MAMMALS; RAW PLASTIC PELLETS OR PLASTIC SHEETING OR BAGS WHICH ARE IMPROPERLY DISPOSED OF HAVE THE POTENTIAL TO CAUSE INGESTION PROBLEMS.

BECAUSE OF THE WIDE VARIETY OF MATERIALS AND THEIR DIFFERENT POTENTIAL FOR IMPACT, WE PRESENTLY ARE NOT ABLE TO SINGLE OUT A SPECIFIC PRODUCT TYPE OR PRODUCTS AS BEING THE MAJOR SOURCE OF SIGNIFICANT ADVERSE IMPACTS. DUE TO THE VARIETY OF POTENTIAL SOURCES, THE VARYING NATURE OF PLASTIC DEBRIS FOUND IN THE MARINE ENVIRONMENT, AND POTENTIAL REGIONAL VARIATIONS IN PLASTIC

DEBRIS COMPOSITION, THE CONTROL OF PLASTIC POLLUTION IS COMPLEX AND NECESSARILY WOULD NEED TO ADDRESS A VARIETY OF SOURCES AND POTENTIAL IMPACTS, FALLING WITHIN THE EXPERTISE AND SUBJECT MATTER CONCERNS OF A NUMBER OF FEDERAL AGENCIES.

SEVERAL FEDERAL AGENCIES ARE CONCERNED ABOUT THE IMPACTS OF PLASTIC POLLUTION ON THE MARINE ENVIRONMMENT. UNDER THE AUSPICES OF THE DOMESTIC POLICY COUNCIL, AN INTER-AGENCY TASK FORCE, CHAIRED BY NOAA, HAS BEEN FORMED TO EVALUATE AND REPORT ON THIS ISSUE. EPA IS A MEMBER OF THAT INTER-AGENCY TASK FORCE, WITH THE OFFICE OF MARINE AND ESTUARINE PROTECTION SERVING AS THE AGENCY'S LEAD REPRESENTATIVE. THE INTER-AGENCY TASK FORCE WILL ASSESS THE PROBLEM AND THE NEED FOR RESEARCH, IDENTIFY POTENTIAL REDUCTION MEASURES, AND CONSIDER ALTERNATIVE ACTIONS TO ADDRESS THE PROBLEM OF PLASTIC MARINE POLLUTION. WE BELIEVE THAT FORMULATION OF THIS INTER-AGENCY TASK FORCE WILL ALLOW FOR EFFICIENT SHARING AND ANALYSIS OF EXISTING INFORMATION AND EXPERTISE BETWEEN FEDERAL AGENCIES AND ALSO ENABLE A BETTER ASSESSMENT OF WHAT, IF ANY, FURTHER STUDIES MAY BE APPROPRIATE WITH REGARD TO PLASTIC DEBRIS IN THE MARINE ENVIRONMENT. WE THUS SUPPORT THE FURTHER EVALUATION AND ANALYSIS OF THE MARINE PLASTIC DEBRIS PROBLEM AND LOOK FORWARD TO PARTICIPATING ON THE INTER-AGENCY TASK FORCE.

WE NOTE THAT §107 OF S. 633 CALLS FOR EPA TO CONDUCT A STUDY TO DETERMINE METHODS TO REDUCE OR ELIMINATE THE DISPOSAL OF PLASTIC PRODUCTS INTO U.S. WATERS, AND WHICH IS TO INCLUDE, AMONG OTHER THINGS, IDENTIFICATION OF SPECIFIC PLASTIC PRODUCTS WHOSE USE, MISUSE, OR IMPROPER DISPOSAL HAS CAUSED SIGNIFICANT HARM TO MARINE LIFE. WE ALSO NOTE THAT §101(a) OF S. 559 CALLS FOR EPA TO UNDERTAKE A STUDY TO DETERMINE METHODS TO CONTROL THE ADVERSE EFFECTS OF PLASTIC DISPOSAL ON THE ENVIRONMENT.

WHILE WE ENDORSE THE BASIC GOALS AND OBJECTIVES OF THESE LEGISLATIVE PROPOSALS, WE URGE THAT THE WORK OF THE INTER-AGENCY TASK FORCE BE ALLOWED TO PROCEED TO A CONCLUSION BEFORE ENACTMENT OF ANY POTENTIAL PLASTICS STUDY LEGISLATION. BY ALLOWING THE INTER-AGENCY TASK FORCE TO COMPLETE ITS EVALUATIONS, WE WILL THEN HAVE THE BENEFITS OF THIS MULTI-AGENCY EFFORT AND WILL ENJOY A BETTER UNDERSTANDING OF WHAT, IF ANY, ADDITIONAL AREAS NEED TO BE TARGETED FOR FURTHER STUDY. MOREOVER, THIS TIME PERIOD NEED NOT BE ONE OF INACTIVITY ON THE REGULATORY FRONT, AS WORK CAN, AND SHOULD, PROCEED ON RATIFICATION AND IMPLEMENTATION OF MARPOL ANNEX V.

ACCORDINGLY, WHILE WE SUPPORT THE UNDERLYING INTENT OF THESE LEGISLATIVE PROPOSALS FOR STUDY OF ISSUES ASSOCIATED WITH MARINE PLASTIC DEBRIS, WE BELIEVE WE WOULD BETTER BE ABLE TO CONTRIBUTE TO THEIR FORMULATION AFTER COMPLETION OF THE INTER-AGENCY TASK FORCE'S WORK. IF, HOWEVER, THESE PROVISIONS CONTINUE TO MOVE AHEAD, WE NOTE THAT §107(d) OF S. 633 PROVIDES ONLY 6 MONTHS TO COMPLETE THE REQUIRED STUDY, A TIMEFRAME WHICH WE FEEL IS TOO SHORT. THE PROVISIONS OF §102 of S. 559, WHICH PROVIDES 18 MONTHS FROM ENACTMENT FOR COMPLETION OF THE REPORT, ARE PREFERRED. FINALLY, WE ALSO ARE CONCERNED THAT NEITHER BILL SPECIFIES THE LEVEL OF EFFORT TO BE APPLIED IN PREPARING THE REPORTS, INSTEAD SIMPLY AUTHORIZING APPROPRIATION OF SUCH FUNDS AS MAY BE NECESSARY.

Need to Evaluate Feasibility of Alternative Products; Need to Require, by Regulation, Use of Degradable Plastics

THE SECOND TOPIC RAISED IN THE LETTER OF INVITATION IS THE NEED TO EVALUATE THE FEASIBILITY AND SAFETY OF USING ALTERNATIVE PRODUCTS, INCLUDING THOSE WITH DEGRADABLE RESINS, IN LIEU OF THOSE NON-DEGRADABLE PLASTIC PRODUCTS WHICH HAVE BEEN FOUND TO BE ENVIRONMENTALLY DAMAGING. IN ADDITION, TOPIC NUMBER (5) OF THE LETTER OF INVITATION ADDRESSES THE NEED TO REQUIRE, BY REGULATION, THE USE OF DEGRADABLE PLASTIC RESINS IN PRODUCTS THAT HAVE BEEN FOUND TO BE ENVIRONMENTALLY DAMAGING. BECAUSE THESE TWO TOPICS ARE SO CLOSELY RELATED, I WOULD LIKE TO ADDRESS THEM TOGETHER.

IN MY PREVIOUS TESTIMONY OF JULY 29, 1987, BEFORE THE SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION, I INDICATED THAT EPA BELIEVES CONSIDERATION NEEDS TO BE GIVEN TO THE USE OF ALTERNATIVE TYPES OF PLASTICS. MATERIALS WHICH BIO- OR PHOTO-DEGRADE POTENTIALLY POSE A LESSER RISK IN THE MARINE ENVIRONMENT AS THEY WILL EVENTUALLY BREAK DOWN, AS OPPOSED TO CONVENTIONAL PLASTIC PRODUCTS WHICH CAN PERSIST FOR DECADES IN THE MARINE ENVIRONMENT. BECAUSE OF THIS, ONE AVENUE

WHICH WARRANTS EVALUATION WHEN CONSIDERING POTENTIAL METHODS TO MITIGATE THE IMPACTS OF PLASTIC POLLUTION WOULD BE THE USE OF DEGRADABLE MATERIALS.

HOWEVER, WE DO NOT VIEW BIO-DEGRADABLITY OF PLASTICS OR USE OF ALTERNATIVE MATERIALS AS THE ULTIMATE OR ONLY SOLUTION. WHILE SUCH DEGRADABILITY WOULD HAVE A ROLE TO PLAY IN MITIGATING THE EFFECTS OF IMPROPER USE OR DISPOSAL OF PLASTIC MATERIALS, IT SHOULD BE ONLY ONE ELEMENT OF A CONTROL STRATEGY WHICH MIGHT ALSO INCLUDE SUCH MEASURES AS CONTROLS ON DISPOSAL PRACTICES AND PUBLIC EDUCATION AS TO THE NEED FOR PROPER DISPOSAL. CONSIDERATION ALSO WOULD NEED TO BE GIVEN TO THE TYPES OF PRODUCTS TO BE TARGETED FOR DEGRADABLITY. SOME PRODUCTS BY THE VERY NATURE OF THEIR DESIGN OR USE MIGHT NOT BE SUITABLY MADE FROM DEGRADABLE PLASTICS. IN ADDITION, CONSIDERATION WOULD NEED TO BE GIVEN TO THE RESIDUE LEFT AFTER THE DEGRADATION PROCESS AND TO THE POTENTIAL EFFECTS OF DEGRADABLE PLASTICS AS, FOR EXAMPLE, WHEN TRASH CONTAINING DEGRADABLE PLASTICS IS INCINERATED, WITH POTENTIAL RELEASE OR FORMULATION OF BY-PRODUCTS.

THE INTER-AGENCY TASK FORCE WHICH I HAVE PREVIOUSLY REFERRED TO IN MY TESTIMONY WILL BE LOOKING AT ISSUES ASSOCIATED WITH THE USE OF DEGRADABLE PLASTICS AND ALTERNATIVE MATERIALS AND THEIR POTENTIAL ROLE IN A STRATEGY TO CONTROL PLASTIC POLLUTION. BECAUSE THIS ISSUE WILL BE THE SUBJECT OF FURTHER EVALUATION, WE DO NOT, AT THE PRESENT TIME, SUPPORT IMMEDIATE ENACTMENT OF PROVISIONS INTENDED TO REQUIRE THE USE OF DEGRADABLE PLASTICS.

WE FEEL THAT §202 OF S. 559, WHICH WOULD FLATLY REQUIRE ANY CONTAINER PACKAGING DEVICES CAPABLE OF ENTANGLING WILDLIFE TO BE MADE OF NATURALLY DEGRADABLE MATERIAL, WOULD UNDULY RESTRICT AGENCY FLEXIBILITY AND AT THE SAME TIME, BY TARGETING ONE PARTICULAR TYPE OF PRODUCT, MAY PROVE TO BE TOO NARROW IN SCOPE.

I WISH TO EMPHASIZE THAT WE DO NOT OPPOSE THE USE OF DEGRADABLE MATERIALS FOR PRODUCTS POSING AN ENTANGLEMENT THREAT. WE BELIEVE THAT FURTHER CONSIDERATION SHOULD BE GIVEN TO BROADER ISSUES SURROUNDING THE USE OF DEGRADABLE PLASTICS OR OTHER MATERIALS, BEFORE THEIR USE IS FLATLY REQUIRED. IN ADDITION, WE WILL BE LOOKING AT THE POSSIBLE USE OF OUR EXISTING STATUTORY AUTHORITIES TO ADDRESS THE USE OF DEGRADABLE MATERIALS, INCLUDING CONSIDERATION OF THE POTENTIAL APPLICABILITY OF THE TOXIC SUBSTANCES CONTROL ACT (TSCA).

Need to Regulate Plastic Disposal in Aquatic and Terrestrial Environment; Need for Criminal and Civil Penalties to Enforce Regulations

THE THIRD TOPIC RAISED FOR DISCUSSION BY THE LETTER OF INVITATION ADDRESSES THE NEED TO REGULATE THE DISPOSAL AND DUMPING OF PLASTICS IN THE AQUATIC AND TERRESTRIAL ENVIRONMENT. CLOSELY RELATED TO THIS, THE FOURTH TOPIC RAISED BY THE LETTER OF INVITATION DEALS WITH THE NEED FOR CIVIL AND CRIMINAL PENALTIES TO ENFORCE THE REGULATIONS.

AS I DISCUSSED IN THE INTRODUCTORY PORTION OF MY TESTIMONY, THE TRANSPORTATION OF MATERIALS FOR THE PURPOSE OF OCEAN DUMPING ALREADY IS REGULATED BY THE OCEAN DUMPING ACT AND THE LONDON

DUMPING CONVENTION. AS PREVIOUSLY DESCRIBED, ANNEX I OF THAT CONVENTION ADEQUATELY ADDRESSES THE TRANSPORTATION OF PLASTIC MATERIALS FOR PURPOSES OF OCEAN DUMPING AND THE REQUIREMENTS OF ANNEX I ARE CURRENTLY REFLECTED IN THE AGENCY'S OCEAN DUMPING REGULATIONS. THUS, WE FEEL THAT FOR THIS POTENTIAL SOURCE, ADEQUATE CONTROLS ALREADY EXIST.

WITH REGARD TO THE DISPOSAL OF WASTES GENERATED DURING THE NORMAL OPERATION OF VESSELS, WE SUPPORT THE PROMPT ENTRY INTO FORCE OF ANNEX V OF MARPOL. ANNEX V OF MARPOL, AMONG OTHER THINGS, ESSENTIALLY PROHIBITS THE DISPOSAL INTO THE SEA OF PLASTIC WASTES, INCLUDING NETTINGS, GENERATED DURING THE NORMAL OPERATION OF VESSELS. THAT ANNEX WAS TRANSMITTED FOR THE ADVICE AND CONSENT OF THE SENATE IN FEBRUARY AND WE URGE PROMPT AND FAVORABLE ACTION. WE BELIEVE THAT ANNEX V OF MARPOL IS A KEY FACTOR IN ESTABLISHING A CONTROL STRATEGY TO ADDRESS PLASTIC POLLUTION FROM THE OPERATION OF SHIPS. OUR INFORMATION INDICATES THAT SOME OF THE COMMON TYPES OF PLASTIC DEBRIS FOUND IN THE MARINE ENVIRONMENT (E.G., PLASTIC SHEETS, STRAPPING BANDS) ARE OF A TYPE WHICH APPEAR TO BE ASSOCIATED WITH DISPOSAL OR LOSS FROM VESSELS. FOR EXAMPLE, A RESEARCHER CITED IN THE CENTER FOR ENVIRONMENTAL EDUCATION'S PLASTICS STUDY ESTIMATED THAT AS MANY AS 639,000 PLASTIC CONTAINERS PER DAY ARE DISPOSED OF WORLDWIDE FROM SHIPS. THUS, WE SEE A REAL NEED FOR THE EFFECTIVE IMPLEMENTATION OF ANNEX V.

THE COAST GUARD IS THE AGENCY WITH PRIMARY RESPONSIBILITY AND EXPERTISE FOR IMPLEMENTATION OF THOSE PORTIONS OF MARPOL ALREADY IN EFFECT FOR THE U.S. THEY HAVE DRAFTED A BILL, WHICH TAKES THE FORM OF AN AMENDMENT TO THE ACT TO PREVENT POLLUTION FROM SHIPS (33 U.S.C. §§1901 ET SEQ.), TO IMPLEMENT ANNEX V OF MARPOL. WE SUPPORT THEIR PROPOSED LEGISLATION ON THIS IMPORTANT SUBJECT (S. 560, AS AMENDED AT 133 CONG. REC. S11189).

WE BELIEVE THAT THROUGH EPA'S IMPLEMENTATION OF THE OCEAN DUMPING ACT AND THE COAST GUARD'S IMPLEMENTATION OF ANNEX V (FOLLOWING ITS ENTRY INTO FORCE), A SOUND AND EFFECTIVE BASIS WILL EXIST FOR THE REGULATION OF PLASTIC WASTE DISPOSAL BY VESSELS INTO MARINE WATERS. IN ADDITION, THE CLEAN WATER ACT PROVIDES AN EXISTING FRAMEWORK FOR REGULATING POINT SOURCE DISCHARGES AND FOR DEVELOPING STRATEGIES TO ADDRESS NON-POINT SOURCES WHICH COULD BE USEFUL IN COMBATTING PLASTIC POLLUTION. WE NEED TO EXAMINE OUR ACTIVITIES UNDER THE CLEAN WATER ACT TO DETERMINE WHAT, IF ANY, STEPS MIGHT NEED TO BE TAKEN TO ADDRESS THE DISCHARGE OR RUN-OFF OF PLASTICS WHICH MIGHT FIND THEIR WAY INTO THE MARINE ENVIRONMENT.

IN THIS REGARD, WE NOTE THAT §102(a) OF S. 633 APPEARS TO GO BEYOND THE REACH OF MARPOL WITH REGARD TO ITS PLASTIC PROHIBITION BY: 1) PROHIBITING THE DISPOSAL OF PLASTICS FROM NOT ONLY SHIPS, BUT OTHER SOURCES AS WELL, 2) APPLYING THAT PROHIBITION TO NOT ONLY MARINE WATERS BUT INLAND WATERS, AND 3) APPLYING THE PROHIBITION TO THE DEPOSIT OF PLASTICS ON LAND IN SUCH A MANNER THAT THEY MAY BE WASHED INTO THE WATER. FOR PLASTICS, IT THUS APPEARS THAT S. 633'S JURISDICTIONAL SCHEME GOES BEYOND THAT OF MARPOL AND OVERLAPS WITH JURISDICTION ALREADY EXISTING UNDER THE CLEAN WATER ACT AND §13 OF THE RIVERS AND HARBORS ACT OF 1899. IN ADDITION, THE STATE DEPARTMENT ADVISES US THAT SECTION 102(a) COULD ALSO BE READ TO APPLY TO FOREIGN FLAG VESSELS BEYOND THE U.S. EEZ, WHICH WOULD BE INCONSISTENT WITH CUSTOMARY INTERNATIONAL LAW.

BECAUSE WE WILL BE EXAMINING EXISTING STATUTES AND THEIR POTENTIAL USE IN COMBATTING PLASTIC POLLUTION, WE ARE CONCERNED WITH THE POTENTIALLY OVERLAPPING JURISDICTIONAL SCHEME FOLLOWED BY S. 633 FOR PLASTICS. IN ADDITION, WE ARE CONCERNED THAT THIS SEEMINGLY DUPLICATIVE SCHEME WILL CAUSE CONFUSION AS TO WHAT AGENCIES ARE PRIMARILY RESPONSIBLE FOR IMPLEMENTATION OF THE PLASTICS BAN CONTAINED IN S. 633 AND POSSIBLE CONFUSION AMONG THE REGULATED COMMUNITY AS TO WHICH STATUTES APPLY TO THEIR ACTIVITIES. ALTHOUGH WE NOTE THAT §102(b)(5) OF S. 633 DOES ADDRESS IN PART THE RELATION OF S. 633 TO THE OCEAN DUMPING AND CLEAN WATER ACTS, WE BELIEVE THAT CLOSER COORDINATION BETWEEN S. 633 AND OTHER JURISDICTIONALLY-RELATED STATUTES WOULD BE NECESSARY TO AVOID CONFUSION.

WITH REGARD TO OTHER POTENTIAL LAND-BASED SOURCES OF PLASTICS, SUCH AS COMMON LITTERING OR MIGRATION FROM SOLID WASTE LANDFILLS, WE SEE THIS PRIMARILY AS A RESPONSIBILITY FOR THE STATES, AND NOT THE FEDERAL GOVERNMENT. FOR EXAMPLE, WHILE SUBTITLE D OF RCRA CALLS FOR EPA TO ISSUE REGULATIONS DEALING WITH SOLID WASTE LANDFILLS, THE ACTUAL MANAGEMENT OF

SOLID WASTE RIGHTFULLY REMAINS PRIMARILY THE RESPONSIBILITY OF STATE AND LOCAL GOVERNMENTS. WE BELIEVE IT WOULD NOT BE APPROPRIATE FOR THE FEDERAL GOVERNMENT TO INTRUDE ON THIS EXISTING FRAMEWORK.

TURNING TO THE NEED FOR ADEQUATE CIVIL AND CRIMINAL PENALTIES TO ENFORCE REGULATIONS RELATED TO PLASTIC DISPOSAL, WE BELIEVE THAT AN ADEQUATE AND EFFECTIVE ENFORCEMENT SCHEME IS A NECESSARY ELEMENT TO ASSURE REGULATORY COMPLIANCE. IN THIS REGARD, THE COAST GUARD'S PROPOSED LEGISLATION (S. 560, AS AMENDED) IS PREFERABLE WITH REGARD TO CRIMINAL PENALTIES SINCE IT RETAINS THE EXISTING PROVISION IN THE ACT TO PREVENT POLLUTION FROM SHIPS FOR CRIMINAL PENALTIES OF $50,000/5 YEAR IMPRISONMENT, WHEREAS §103(a) OF S. 633 INSTEAD HAS A 3 YEAR INCARCERATION PROVISION.

WHILE WE WOULD GENERALLY DEFER TO THE COAST GUARD'S EXPERTISE ON MARPOL ENFORCEMENT, WE DO NOTE AN ATTRACTIVE FEATURE IN §§103(a) AND 104(a) OF S. 633, UNDER WHICH UP TO ONE-HALF OF THE CIVIL OR CRIMINAL PENALTIES COLLECTED MAY GO TO THE INFORMANT. BECAUSE VIOLATIONS OF MARPOL ANNEX V MAY TAKE PLACE ON SHIPS AT SEA WHICH ARE REMOTE FROM MORE DIRECT METHODS OF SURVEILLANCE, IT WOULD SEEM THAT THIS FINANCIAL INCENTIVE WOULD BE AN ESPECIALLY USEFUL DEVICE IN ENCOURAGING CREW AND PASSENGERS TO DETECT AND REPORT VIOLATIONS.

FINALLY, WITH REGARD TO ENFORCEMENT RESPONSIBILITY, WE NOTE THAT S. 633 §104(a) PROVIDES THAT THE AUTHORITY TO ASSESS CIVIL PENALTIES WOULD BE SHARED BY THE DEPARTMENTS OF TRANSPORTATION, COMMERCE, INTERIOR AND EPA. WE BELIEVE THAT SUCH A BROAD SHARING OF AUTHORITY WITHOUT ATTENDANT DEFINITION OF THE VARIOUS AGENCY'S RESPONSIBILITIES MAY LEAD TO CONFUSION AND DUPLICATION. IF CIVIL PENALTY AUTHORITY IS TO BE SHARED AMONG SEVERAL AGENCIES, THEIR INDIVIDUAL RESPONSIBILITIES SHOULD BE MORE SPECIFICALLY DEFINED.

Need for Public Education on Proper Disposal of Plastic; Need to Evaluate Feasibility of Product Labelling as to Proper Disposal

THE LAST TWO ISSUES RAISED BY THE LETTER OF INVITATION WERE THE NEED TO ENCOURAGE PROPER USE AND DISPOSAL OF PLASTIC PRODUCTS THROUGH PUBLIC EDUCATION AND THE NEED TO EVALUATE THE FEASIBILITY OF LABELLING ENVIRONMENTALLY HARMFUL PLASTIC PRODUCTS TO ENSURE PROPER DISPOSAL.

WE BELIEVE ONE SIMPLE AND EXPEDITIOUS WAY TO AT LEAST START REDUCING THE IMPACTS OF PLASTIC DEBRIS IS TO ALERT THE PUBLIC TO THE IMPACTS CAUSED BY IMPROPER PLASTIC DISPOSAL SO THAT THEY MAY TAKE STEPS TO ALTER THEIR DISPOSAL PRACTICES. THE INTER-AGENCY TASK FORCE HAS GIVEN PRELIMINARY CONSIDERATION TO MOUNTING SUCH A CAMPAIGN, AND EPA SUPPORTS §108 OF S. 633 WHICH CALLS FOR EPA, NOAA, AND THE DEPARTMENT OF INTERIOR TO CONDUCT A PUBLIC EDUCATION PROGRAM AS TO THE HARM CAUSED BY IMPROPER DISPOSAL OF PLASTIC AND THE PENALTIES FOR VIOLATIONS OF THE STATUTES GOVERNING ITS DISPOSAL.

WE BELIEVE SUCH A CAMPAIGN COULD HELP TO START REDUCING GENERAL LITTERING AS A SOURCE OF MARINE PLASTIC DEBRIS. ALSO, WE BELIEVE THAT CONDUCTING AN OUTREACH CAMPAIGN TARGETED AT PERSONNEL OF THE SHIPPING INDUSTRY, ESPECIALLY FOLLOWING THE ENTRY INTO FORCE OF MARPOL ANNEX V, WILL HELP PAVE THE WAY FOR IMPROVED WASTE DISPOSAL PRACTICES BY SHIPS AND COMPLIANCE WITH ANNEX V OF MARPOL. WE DO NOT VIEW PUBLIC EDUCATION AS A SUBSTITUTE FOR OTHER POTENTIAL CONTROL MEASURES, BUT DO SEE IT AS A USEFUL TOOL IN THE OVERALL EFFORTS TO CURB PLASTIC POLLUTION, AND A TOOL WHICH CAN BE EMPLOYED NOW WITH GOOD EFFECT.

WITH REGARD TO LABELLING AS TO PROPER DISPOSAL PRACTICES FOR PLASTIC PRODUCTS, WE BELIEVE THAT AN EFFECTIVE PUBLIC EDUCATION PROGRAM CAN REDUCE THE NEED FOR A WIDESPREAD LABELLING CAMPAIGN. WE CAN SEE A POTENTIAL ADVANTAGE FOR PRODUCT LABELLING IN THE CASE OF SPECIALTY PRODUCTS OR PRODUCTS WITH A PARTICULAR POTENTIAL FOR HARM IF IMPROPERLY DISPOSED OF, OR FOR WHICH PROPER DISPOSAL METHODS ARE NOT READILY APPARENT. HOWEVER, AT THIS TIME WE ARE NOT IN A POSITION TO IDENTIFY WHAT PRODUCTS MIGHT BE APPROPRIATE FOR A LABELLING REQUIREMENT AND BELIEVE THAT INITIAL EFFORTS SHOULD INSTEAD FOCUS ON OTHER CONTROL MEASURES AND PUBLIC EDCUCATION BEFORE PLACING TIME AND RESOURCES IN THE INVESTIGATION OF THE FEASIBILITY AND BENEFITS OF PRODUCT LABELLING.

Conclusion

EPA BELIEVES THAT PLASTIC POLLUTION OF THE MARINE ENVIRONMENT IS A SIGNIFICANT PROBLEM WHICH WARRANTS THE ATTENTION AND

ACTION OF THE FEDERAL GOVERNMENT. TO THIS END WE BELIEVE THAT THE FORMULATION OF AN INTER-AGENCY TASK FORCE, UNDER THE CHAIR OF NOAA, IS A NECESSARY AND APPROPRIATE FIRST STEP. EPA LOOKS FORWARD TO ITS ROLE ON THAT TASK FORCE. PENDING COMPLETION OF THE INTER-AGENCY'S TASK FORCES ACTIVITIES, WE URGE RATIFICATION OF ANNEX V OF MARPOL AND ENACTMENT OF S. 560, AS AMENDED. IN ADDITION, PENDING COMPLETION OF THE INTER-AGENCY TASK FORCE'S WORK, WE SUPPORT THE IMPLEMENTATION OF A PUBLIC EDUCATION CAMPAIGN TARGETED AT BOTH THE GENERAL PUBLIC AND THE SHIPPING INDUSTRY TO ALERT THEM OF THE HARMS CAUSED BY IMPROPER DISPOSAL OF PLASTIC PRODUCTS. BEFORE IMPOSING CONTROL MEASURES BEYOND THOSE ADDRESSED ABOVE, WE BELIEVE THAT THE INTER-AGENCY TASK FORCE SHOULD COMPLETE ITS EVALUATION OF PLASTIC DISPOSAL ISSUES SO THAT THE INFORMATION WHICH MAY BE GAINED BY THIS MULTI-AGENCY EFFORT MAY BE APPLIED IN DEVELOPING APPROPRIATE STATUTORY MEASURES OR REGULATORY AUTHORITIES TO FURTHER CONTROL THE PLASTICS DISPOSAL PROBLEM.

I APPRECIATE THE OPPORTUNITY TO PRESENT OUR VIEWS ON THE TOPICS WHICH WERE RAISED IN THE LETTER OF INVITATION AND LOOK FORWARD TO WORKING WITH YOU IN OUR COMMON GOAL OF COMBATTING THE EFFECTS OF PLASTIC POLLUTION. THIS CONCLUDES MY TESTIMONY, AND I WILL BE PLEASED TO ANSWER ANY QUESTIONS YOU MAY HAVE.

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Statement

of

Mr. Lewis R. Freeman, Jr.

Vice President, Government Affairs

of

The Society of the Plastics Industry, Inc.

before the

Subcommittee on Environmental Protection

of the

Committee on Environment and Public Works

United States Senate

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PAST PERFORMANCE—FUTURE PROGRESS

I am Lewis R. Freeman, Jr., Vice President, Government Affairs, The Society of the Plastics Industry, Inc. Accompanying me is H. Patrick Toner, Director, Technical and Regulatory Affairs, The Society of the Plastics Industry, Inc. We welcome the opportunity to appear before the Subcommittee on Environmental Protection to present views on the subject of marine debris.

The Society of the Plastics Industry, Inc. is a trade association of nearly 2000 members. Our companies represent all segments of the U.S. plastics industry, including raw material or resin producers, distributors, manufacturers of processing machinery, moldmakers, and plastics processors and fabricators. The latter group, the processors, represents the vast majority of our ranks.

Marine debris is not a new phenomenon. Since the first fisherman or seaside resident used the convenience of the ocean to dispose of waste, there has been marine debris. What is perhaps new is that debris in the ocean has become a widely recognized problem, and particularly a threat for certain forms of marine life. What is also new is that some of the debris is more environmentally persistent.

The stated objective of this hearing, as well as the several bills pending before the subcommittee, is to seek ways of controlling and reducing "pollution from plastic waste material." Before turning my attention to these bills and other questions posed in the call for the hearing, I wish to make a few general remarks about the plastics industry's views of the problem of marine debris.

No industry likes being singled out as the cause of a problem. Ours is no exception. However, the SPI recognizes that plastics behave differently than other materials in a marine environment. Their characteristics of durability, strength, light weight, and flexibility make plastics materials preferable to use in a host of products. These same desirable characteristics can sometimes become undesirable when plastics products become waste and are discarded or lost in the ocean.

To the extent that plastics are part of the marine debris problem, the SPI and the plastics industry will continue to work with government, environmental groups, and other industries to develop responsible and effective solutions. But marine debris is more than just a problem of "plastics pollution," the term so frequently used to describe it. It is a broader problem of debris from all types of materials being discarded in the oceans.

There will be a marine debris problem with or without plastics as long as a growing and affluent world population continues the overt - and sometimes covert - practice of using the oceans of the world as a convenient place to put waste.

There was a time when waste was dumped in the streets of villages and towns. Society stopped doing that when it became apparent that the public health was threatened by the practice. It is time that the same logic be applied to dumping wastes in and around the marine environment. Plastics waste does not belong in the oceans. Neither do glass, metal or even paper wastes.

The problem of marine life becoming entangled in or ingesting debris, including plastics, has been well-documented in recent months by the press and in other congressional hearings. The principal sources for such debris appear to be the following:

- The commercial fishing industry: fishing gear, primarily netting, that is lost or discarded at sea;

- The marine shipping industry and the naval fleet: millions of tons of trash that are dumped overboard by merchant ships and naval vessels every year;

- Boaters and beachgoers: picnic utensils and ring-carriers that are improperly discarded along the nation's beaches and waterways;

- Municipal storm and waste sewers: antiquated sewer systems that allow debris to be washed into the oceans and onto the beaches; and

- Plastics manufacturing: resin pellets that by various means make their way from plastics plants into the marine environment.

Among the features of legislation pending before this committee, as well as others in the Congress, the most important requiring attention is that dealing with the ratification and implementation of Annex V of the MARPOL Convention. SPI supports that annex, which would prohibit the dumping of garbage, including plastics, from ships. Implementing the provision would have an important dual effect. It would provide a basis of significant direct action to reduce unwanted debris in the oceans. Second, it would help further heighten public awareness of the issue of marine debris.

S. 633, sponsored by Senator Lautenberg, and S. 559, sponsored by Senator Chafee, each call for the Environmental Protection Agency to undertake a study to determine methods for reducing or controlling adverse effects from the disposal of plastics products in the waters under the jurisdiction of the United States. Each bill details specific remedies to the problem that the study should consider. The U.S. Environmental Protection Agency has already released a very comprehensive study on the effects of plastics debris in the marine environment upon various forms of marine life. We believe a further study by the federal government could be useful in helping determine the most effective remedies to the problem of marine debris, but we offer the following recommendations to make the study more effective:

- A further study of the marine debris problem should determine what harm is done by all debris, including plastics;

- With regard to plastics debris, the charge to the study should permit the responsible agency appropriate latitude in considering what remedies to recommend, but should not bias the study by suggesting what the remedies should be prior to an appropriate determination and analysis of the problem; and

- The National Oceanic and Atmospheric Administration (NOAA) should be the agency designated to coordinate the study, in cooperation with all other responsible federal agencies and outside groups. NOAA has already established an important learning curve on the marine debris problem and has appropriate authority to deal with the issue. The marine debris problem needs prompt attention and it would expedite the conduct of a study if NOAA were the agency in charge of its implementation.

While we believe that legislation authorizing a study should be broadly written, we are mindful that questions have been asked of us concerning specific aspects of the marine debris problem and I wish to turn attention to some of those.

RESIN PELLETS

Plastics resin pellets are the raw material supplied by resin manufacturers to the literally thousands of processors around the country who remelt the pellets and form them into usable plastics

articles. In initial discussions of this question with industry members, we have identified two possible ways that the pellets find their way into the oceans: transportation - related spills and plant outfall. There is anecdotal information about shipping containers breaking, thus allowing the pellets to spill off of a ship or barge. Occasional spills also can occur when loading the pellets into shipping packages or bulk containers like railroad hopper cars; during the transportation stage, on land or sea; while unloading the pellets at the user plant; and in the final transfer stage to the equipment that heats and melts the pellets. Another source has been outflow from resin plants, but it may no longer be a problem in the U.S.
Last fall we held an all day meeting with representatives of our major resin companies to discuss this problem. We learned that several steps have been taken in recent years to remedy resin pellet losses. One company even made a public service videotape about the system it installed in its plants to capture resin pellets that might otherwise be lost during the cleaning of tank cars or through outflow pipes into navigable bodies of water. The video has been made available widely within and outside of our industry.

We have nearly completed a survey of resin companies within the SPI concerning current industry practices in containing resin pellets. Analysis of preliminary results indicates that the problem of pellets escaping from resin manufacturing plants is one of the past. Current containments practices appear to be successful in eliminating the problem. We are, though, examining other parts of the industry to make sure that safety practices in resin transportation to and handling at the fabricating plant level are sufficient to prevent fugitive resin pellets from entering the environment.

It is important to point out that resin pellets in the oceans do not originate from only U.S. sources. Less than 30% of the world's plastics resin is manufactured in the United States. In recent months, we have initiated discussions with plastics industry associations in other countries on this and other aspects of the marine debris problem. We hope to have more specific information later this year concerning the problem elsewhere in the world and steps being taken to address it.

NEED FOR PUBLIC EDUCATION

The problem of marine debris is first and foremost a people problem. The debris that is fouling oceans and beaches and harming marine life, is in most instances, discarded by people who do not appreciate the consequences.

Over the past year, since becoming more aware of the problems caused by marine debris, The Society of the Plastics Industry, in cooperation with the Center for Environmental Education, began developing a public education program to address the improper disposal of plastics in the marine environment. Our first major project is a series of public service advertisements for trade publications in the commercial shipping, commercial fishing, and plastics industries. The advertisements and appropriate backup materials are different for each industry group, but the ultimate message is the same for each: don't discard plastics in the ocean. They should begin appearing after this year. We are pleased that the National Oceanic and Atmospheric Administration will be joining SPI and CEE as signatories to the ads. Work on additional educational projects has already begun.

DEGRADABILITY

An often suggested solution to the problem of marine plastics debris is a wider use of degradable products, including plastics, in applications involving the marine environment. There are two basic mechanisms by which materials degrade. Materials photodegrade when exposed to ultraviolet radiation from the sun, and biodegrade when subjected to microorganisms under certain conditions of temperature, humidity and acidity.

Plastics are not inherently degradable, which is why they have become the preferred material for a number of marine applications. However, research has been conducted for several years on the development of degradable plastics, with some limited success. Because of the widespread interest in the possibilities and the limitations of plastics being made degradable, SPI sponsored in June a Symposium on Degradable Plastics. It was attended by over 300 persons.

The purpose of the symposium was to disseminate information about work being done within and outside of the plastics industry, on making plastics degrade, and to explore the technical, economic, and social dimensions of the subject. We felt it important not only to examine how — and if — some plastics can be made to degrade, but also whether it is desirable for certain plastic products to degrade. There were some common themes in many of the papers and speeches presented.

First, promising work is being conducted to make some plastics either biodegradable or photodegradable. Secondly — and equally important — there are decided limitations on what products may or may not be suitable for degradability. Performance of plastic products, including safety requirements, should not be compromised by steps required to make them degradable. Third, most degradability research has been based on disposal on land, not in a marine environment.

Fourth, research and market experimentation with degradable plastics will continue. However, it is not in the interest of the consuming public or consistent with sound environmental practices for degradable plastics to be pushed as a panacea for solving the marine debris problem. Several questions remain to be addressed. For instance, we need to know more about the environmental impact of by-products resulting from the degradation processes. Further, we must know more about the impact of additives for degradation in plastics packaging materials intended for food contact purposes.

One of the bills before the subcommittee, S. 559, would require certain devices designed for packaging or transporting multi-packaged cans and bottles to be degradable. There are laws in some eleven states providing similar requirements. However, we believe it would be more consistent with the spirit of S. 599 and S. 633 to defer consideration of individual product regulations until the marine debris study called for by these bills is completed.

For your further information, I am submitting for the record copies of the opening remarks delivered at the SPI Symposium on Degradable Plastics by SPI President Charles E. O'Connell and the overview paper on the subject presented by our association.

In conclusion, the SPI believes the marine debris problem is a real one. Plastics clearly should not be discarded in the ocean or any body of water and we pledge to continue working with our industry, our customers and the public on the appropriate ways of using and disposing of plastics.

PRESENTATION ON PLASTIC WASTE REDUCTION IN THE MARINE ENVIRONMENT

Senate Subcommittee on Environmental Protection

September 1987

by

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Mr. Chairman and Members:

I am pleased to appear before the Subcommittee this morning and would like to thank you for this opportunity to discuss the technical aspects of plastic waste reduction. Following a brief discussion of the problem of plastics in the marine environment, I will comment on mitigation strategies, particularly the use of controlled lifetime plastics (commonly referred to as "degradable plastics").

Mr. Chairman, in 1986 total plastic resin sales in the United States alone totaled nearly 49 billion pounds, of which about 23 percent was used in packaging applications. The use of plastics in packaging and other applications has shown consistent growth as the unique attributes of the material became apparent. These attributes include its light weight, chemical/microbiological inertness, superior strength, easy processibility and outstanding durability, all of which are the very properties expected of an outstanding packaging material. Judging by the current developmental activity in the plastics industry, the use of plastics is likely to increase at an even faster rate in the future.

Because they are synthetic materials, plastics might, within limits, be tailor-made to obtain specific useful properties. Originally, plastic compositions with excellent durability were developed by the plastics technology industry in response to the historical consumer demand for stronger, longer lasting plastics. It is this exceptional durability of plastics that allows plastic debris to remain intact for extended periods of time, particularly in the marine environment, thereby posing a threat to marine life (via entanglement and ingestion). Although discussion of the ecological impacts of plastic debris is beyond the scope of my presentation, such impacts should be borne in mind when analyzing the problem of plastics in the marine environment.

There is little doubt that plastics represent the most versatile, cost-effective, and convenient material for packaging. Although increased use of nonplastic alternative materials has been suggested as an easy solution to the plastic debris problem, such a conclusion incorrectly assumes that extended durability is a necessary price to pay for the many desirable characteristics of plastics. Just as the color, softness, odor, and strength of a given plastic material can be changed considerably by an industrial plastics technologist, so can its durability.

Technologies to accelerate the deterioration of several varieties of plastics in the environment to obtain a controlled lifetime for plastic materials have been discussed since the early 1960's. Some of these were commercially pursued to a limited extent, and several enhanced photodegradable plastic products (agricultural mulch films, six-pack holders, etc.) are available in the marketplace. In the 1960's, however, interest in the issue of plastics pollution was insufficient to sustain a research effort. It is hoped that current legislative interest in abatement of plastics pollution of the marine and freshwater environments will help these technologies mature into commercially viable ones.

SOURCES OF PLASTIC DEBRIS IN THE MARINE ENVIRONMENT

All users of marine resources are in part responsible for the current extent of pollution in the marine environment. Principal sources of plastic debris have been identified as follows:

- Fishing activity. Loss of active gear; discarded nonfunctional gear and sections; and plastic "domestic" waste from vessels.
- Naval and commercial vessel activity. Plastic "domestic" waste from vessels; and packing bands, ropes, etc.
- Recreational vessels and beachgoers. Plastic "domestic" wastes; and six-pack rings, bags, and bottles.
- Municipal waste. Plastic items in sewers, mainly tampon applicators.
- Plastic manufacturing industry. Virgin plastic pellets.
- Oil industry. Plastic "domestic" waste from oil rigs and drilling.
- Other sources. Deterioration of floats from docks, marinas, etc.

The only reliable quantitative data available on the relative amounts of plastic debris generated by various activities are from a 1975 study by the National Academy of Sciences. Estimates given therein need to be revised, taking into account the increased vessel activity and the higher consumption levels of plastics in the 1980's. Although only a few surveys have been carried out at sea, one recent sight survey conducted by Dhalberg of the National Marine and Fisheries Service in the Pacific Ocean found that about 80 percent of all sighted floating debris was plastic. Data relating to the levels of plastic debris on beaches, however, are available from the records of several beach cleanup exercises carried out during recent years. These data is summarized in Attachment I.

FATE OF PLASTIC DEBRIS AT SEA

Plastic materials discarded in marine environments deteriorate at a very slow rate mainly because of photodegradation and biodegradation. These are separate processes that occur concurrently. The combined action of both mechanisms is too slow to effect any noticeable short-term deterioration of plastic debris.

Photodegradation is the breakdown of a material as a result of absorption of light energy, usually in the form of ultraviolet radiation in sunlight. The ultraviolet portion of sunlight that is able to degrade plastic constitutes only a very small fraction of total sunlight; in the case of opaque plastic materials, it penetrates only the thin surface layers. Often, the plastic formulation contains an added light stabilizer that further retards light-induced deterioration. In marine environments, plastic materials float on the water and are kept cool by lower water temperatures, which further slows the degradation process. The deterioration process is even slower with plastics that sink in seawater because ultraviolet light is almost completely absorbed by a few meters of seawater and does not reach the plastics.

Biodegradation is the breakdown of a material due to the action of microorganisms using the material as a nutrient source. Research literature shows that most common plastics, including those used in the fabrication of fishing gear and packaging materials, are microbially inert. The residue from extensive light-induced deterioration of plastic material can, to some extent, be attacked by microorganisms. However, the process of microbe-induced deterioration is even slower than the light-induced deterioration process.

In the absence of appreciable rates of deterioration at sea, plastic debris tends to last for even longer periods of time than on land. The lifetimes at sea of even the common varieties of plastics are not known with any degree of reliability because of the very limited amount of research carried out on the subject. Although various estimates are quoted in articles on the subject from time to time, no comprehensive experimental support for these estimates exists. However, it is reasonable to expect the lifetimes at sea to be somewhat longer than are those on land. Some preliminary experimental observations support this view. Because plastics have a relatively short history as a manufactured material, such longevity suggests that none of the plastic materials introduced into the world's oceans to date probably have not degraded as yet, and that they will persist for an indefinite time.

The threat posed by a given item of plastic debris to marine life might be altered in time because of the possible growth of algae, seaweeds, barnacles, etc., on its surface and also because of "silting over" of plastic materials on the ocean floor. This aspect of the debris problem has been virtually ignored in the research literature, and neither the time scale nor the ecological consequences of such processes are well known. In the case of floating plastic materials such as packing bands and trawl webbing, the weight of the marine growth on its surface may cause the plastic debris to sink to the bottom of the sea.

Lack of knowledge on the fate of plastic debris in aquatic/marine environments is unfortunate. The only major ongoing research effort on the general subject of marine plastic debris is funded by the Entanglement Research Program and sponsored by the National Marine Fisheries

Service. A comprehensive research effort is urgently needed to shed light on the fundamental aspects of the problem.

SOLVING THE PROBLEM OF PLASTIC POLLUTION

Efforts to solve the problem of plastic debris in the marine environment consist of two different approaches: (a) limiting of intentional discharge of plastic materials into the sea; and (b) using degradable plastic (or other) material in the fabrication of those types of products that are particularly likely to become marine debris. (Cleanup of beaches and even sections of the sea, although obviously desirable, is not considered a long-term solution.) Both of these broad approaches will undoubtedly contribute toward controlling the levels of plastic debris.

Legislative/Educational Efforts Aimed at Limiting Discharge of Plastics into the Sea

There is little doubt that, in general, a reduced input of pollutants will lead to an improved environment. Educational and legislative means of discouraging intentional discharge of plastic waste into the sea is certainly an appropriate means of addressing the problem. To be successful, the effort would have to be global, and international legislative effort, as illustrated by MARPOL Annex V, goes a long way toward establishing a framework for precisely such an effort. Ratification of the Annex will constitute a major step toward waste reduction. Such bills as S 633 and S 560 are timely and will form the basis of a long-term productive effort to reduce plastic waste in the United States and also contribute to the development of a long-range global solution. The ultimate success of the effort, however, depends on compliance and international cooperation. After all, as many as 73,614 foreign ships landed in U.S. ports last year (only 2 percent of them off-loaded any garbage at port!).

All discharges of plastics into the sea are not intentional; in fishing operations, for instance, the accidental loss of plastic gear plays as important a part (if not an even greater part) in generating debris as does intentional discharging. Gill nets and crab pots, two types of gear that are easily lost, represent a significant fraction of the plastic debris at sea. Beach surveys and sea surface observations do not as a rule include these items, neither of which floats in seawater. Legislative/educational efforts, however, will have little impact on significantly reducing accidental losses of gear and other plastic materials.

Because of restrictions on dumping their plastic wastes at sea, the vessels will either have to incinerate or process/store the garbage onboard while at sea. Ports will presumably provide facilities for a fee for USDA-approved handling and disposal of the wastes. Storage/incineration of plastic wastes is likely to be difficult and even impractical in the case of larger vessels (passenger liners and particularly naval vessels with large numbers of sailors).

Use of Enhanced Degradable Plastics

Using enhanced degradable (or controlled lifetime) plastics in selected plastic products effectively complements the above-mentioned legal/educational strategies to control marine pollution. Assuming that suitable technologies are available or can be developed in the short term, the use of such materials can mitigate the effects of both the intentional and accidental discharging of plastics into the sea. Enforcement of exclusive use of the enhanced degradable varieties of plastics by the users of the sea is likely to be relatively easy.

Degradable plastic materials will of course cost slightly more than regular plastics of the same chemical type. But the premium involved might be comparable to (if not less than) the added cost of disposal of solid wastes off-loaded at ports.

Enhanced degradable plastics are not claimed to be a panacea to plastic pollution, nor does their development and use constitute a technique that can be indiscriminately applied across the board to all types of plastic products suspected of being pollutants. It is a technology that needs to be exploited cautiously to control the lifetimes of selected plastic products in the marine environment. Above all, it is important to ensure that the useful properties of a specific product and its intended lifetime are not significantly altered by rendering it biodegradable. This requires that the various plastic products encountered as debris be studied on a product-by-product basis.

RAPIDLY DEGRADABLE PLASTICS

Plastics may be caused to degrade at a faster rate by making the material more susceptible to either photodegradation or to biodegradation. The former approach assumes that the debris will receive sufficient exposure to sunlight on being discarded.

Enhanced photodegradable plastics are based on either slight chemical modification of the polymer molecule itself or on special additives incorporated into the plastics. Both lead to a material that can absorb ultraviolet light and break down into smaller molecules rapidly. It is reasonable to expect these techniques to perform under marine/aquatic conditions as well as on land. However, neither approach has been well demonstrated to perform under such conditions. For techniques in which an additive is used to enhance photodegradation, it is important to determine the leachability of the additive and its toxicity. When a chemical modification approach is used, there is no danger of leaching.

Common plastics are essentially nonbiodegradable. Unlike rapidly photodegradable plastics, there are not simple modifications that render these materials biodegradable. (Of course, specialty polymers are readily biodegradable, yet they are quite expensive.)

Enhanced biodegradable plastic therefore refers not to a plastic material that is truly biodegradable, but to a mixture of the plastic and another biodegradable material. The biodegradable component of such a mix might be biodegradable plastic or a nonpolymer material. Starch is popularly used for this purpose. A suitably treated or chemically modified starch is mixed with the plastic film during the fabrication of the product (usually plastic bags). In the field, microorganisms rapidly attack the starch and remove it from the plastic matrix to yield a plastic material with a myriad of cavities (spaces formerly occupied by starch). This drastically weakened structure easily breaks up into small fragments. Several researchers claim that the presence of the starch results in the microbes actually degrading some of the plastic as well.

Although enhanced biodegradable plastics have been demonstrated to perform on land, the system has not been shown to function under marine conditions. Moreover, the ability to control a plastic's lifetime using the approach is not known. Several tests to determine the usefulness of the technique under marine conditions are currently underway.

The Six-Pack Carrier

Of the types of plastic materials currently identified as environmentally unacceptable, only the six-pack carrier has been studied in any detail. It is also a good example of a product in which rapid photodegradability has been achieved without sacrificing any performance characteristics. Although the product was developed for degradation on land, it is likely that it might be modified to function in a marine environment. In fact, at least one preliminary study by Dr. Andrady shows the photodegradable six-pack ring material to perform at sea, although at a somewhat slower rate. More studies are needed to demonstrate the performance of this technology under marine and aquatic conditions.

The question of the possible toxicity of products resulting from enhanced degradation of plastics is often raised. With respect to the six-pack ring, there is no reason to believe that enhanced degradation is accompanied by the formation of toxic products. After all, the chemical changes that accompany rapid degradation of plastics are essentially the same as those that occur in the regular plastics when they break down slowly. In enhanced degradable material, these same changes are made to occur faster and cause embrittlement in a few months. Nevertheless, it is prudent to carry out the required studies to ascertain unambiguously if such toxicity is associated with the products of plastic breakdown.

Enhanced degradable six-pack material becomes weak and brittle within 3 months after exposure to sunlight on land. During its lifetime, a typical item of plastic debris undergoes progressive degradation, changing from a single item to a collection of fragments of progressively smaller particle size. Eventually, the particles become so small that they blend in with their surroundings and can no longer be identified as litter. The plastic molecule then begins to break down into smaller organic molecules and ultimately to simple molecules dissipated into the environment.

Although not specifically demonstrated to do so, it is likely that the material after a few weeks of exposure to sunlight is weak enough to allow entangled animals to escape with minimal effort. The product does seem to satisfy most State requirements for a degradable material.

Current State requirements of "degradability" are often incompletely defined. If the intent of the legislation is principally to prevent entanglement, the extent of degradation to be achieved within a given period of time might be specified in terms of fractional reduced strength. If aesthetics damage and ingestion-related hazards are primarily being addressed, then higher extents of degradation based on anticipated average residual particle size might be appropriate. The reduction of a six-pack ring to small particle residue is a rapid process, but the rate of breakdown of this residue to small molecules is not reliably known. Research literature does suggest, however, that such residue might be biodegradable by microbial action. Thus, it is unrealistic and unnecessary to require technically complete degradability within a specified period of time of any enhanced degradable plastic material. Plastic debris embrittled to a coarse powder of a certain critical fineness is aesthetically acceptable and ecologically harmless.

Enhanced degradable plastic breaks down at a rate governed by various climatic factors. The regional variations of key factors such as sunlight and average temperature give rise to regional variability on the "controlled" lifetime of these materials. In formulating requirements, this variation needs to be taken into account. There is little doubt that the use of enhanced photodegradable plastics in six-pack rings very significantly reduces its outdoor lifetime while maintaining product performance. It is an excellent example of an effective use of rapidly degradable plastics technology.

Other Nongear-Related Marine Debris

Plastic bags, packing bands, ropes, bottles, styrofoam pieces, and feminine hygiene products form the major part of beach and marine debris that float in seawater. Most of these materials are made of inexpensive commodity plastics and have a relatively short useful life. As such, most of these products are good candidates for being rendered enhanced degradable. However, unlike the case of the six-pack ring material, there are no off-the-shelf technologies commercially available for such products. For some types of debris such as plastic bags, rope, styrofoam, etc., simple modifications of the enhanced photodegradable technology used in six-pack rings might suffice. In others, further developmental work may be required to identify a suitable technique. Research literature, however, documents several promising approaches, some of which are patented and awaiting further development. (See, for example, studies by Guillett and Scott.)

Most of the nongear plastic debris float in seawater. A particular technical concern whether the light-induced degradation process is rapid enough to act before the surface is covered by a thin film of opaque algae blocking off the light. One alternative is to use an enhanced biodegradable technique that does not depend on the availability of light. Several biodegradable techniques have been patented and demonstrated in the laboratory. (See the work of Otey and Griffin.) Again, further developmental effort is needed to demonstrate their effectiveness in the field, the controllability of the degradation, and effect on product performance.

Gear-Related Marine Debris

Lost and/or discarded fishing gear (gill nets, trawl webbing, and crab pots) constitute the gear-related plastic debris. The sheer size of the gear involved leads to serious ecological consequences in the case of the loss of a whole set of gear or a large portion of a boat's gear (a not infrequent occurrence according to the Fishermen's Gear Damage Compensation Fund). Also smaller pieces of netting torn while in active use (or discarded) are often encountered in beach debris near active fisheries.

Rendering fishing gear enhanced degradable on being discarded at sea is a difficult task that needs to be approached cautiously. Clearly, the usefulness of such gear depends primarily on its ability to maintain its strength and integrity in water. Any premature failure of gear can be economically disastrous to fishermen. The long useful lifetimes of some types of gear, particularly large trawls, make the use of degradable technologies in this application an even more formidable task.

However, some specific types of gear are used for a relatively short period of time. For fishing gear that is used during only a single season (or even two to three seasons, it might be possible to limit its lifetime at a level that is several times its average period of usefulness. This essentially builds in a margin of safety against premature failure. It is difficult to speculate if available technologies can be used successfully to design such gear. If such designs can indeed be achieved, they will still represent a tremendous improvement over the conventional material now used, especially in terms of lifetime when the gear is discarded intentionally or accidently at sea. (Any shortening of lifetime of the discarded/lost gear is highly desirable from an environmental point of view.) Whether the various enhanced degradable plastic technologies are capable of achieving a useful degree of controllability and level of performance at sea so as to be able to use them in gear is not known. A fair amount of research and developmental work is needed before candidate techniques for experimentation can be identified.

CONCLUSION

There is little doubt that efforts at reducing plastic waste both on land and at sea are timely. Doing so, however, need not involve changing over to less desirable alternative materials. Various technologies that seek to control the outdoor lifetimes of plastics are continually evolving. Some, like the six-pack ring technology have reached the marketplace. Others have not as yet made it out of the laboratory because of lack of public interest. It is likely that these latter technologies might prove to be useful in controlling at least some types of plastic pollution in our seas. I think that the various bills under discussion will not only promote environmental conscientiousness, but will also provide the impetus for these technologies to mature into appropriate commercial uses.

Responsible exploitation of enhanced degradable plastics for waste reduction involves a significant research effort. Such research should be directed not only to develop, improve, and fine-tune the various enhanced degradable plastic technologies, but also to understand fully the environmental implications of using such technologies. The fate of plastics in the marine environment, the novel enhanced degradable techniques, and the possible toxic by-products associated with using such techniques warrant particular research consideration. Bills such as S 633 and S 559 require studies that cover some of the above aspects. The Federal Government can play a key role in furthering our understanding of the marine plastic debris problem and possibly help promote the development of effective mitigatory methods by supporting an adequate research effort to solve the problem.

Mr. Chairman, as a scientist, I have often been amazed by the innovations and originality that have marked the rapid development of plastics technology. Whenever users demanded superior strength, lasting clarity, exceptional flexibility, or extended outdoor life, industrial technologists and researchers unerringly responded with plastics that outperformed traditional materials in each of those areas. Today, if the consumer wants plastics with controlled lifetimes outdoors, I feel very confident that the versatile plastics industry is resourceful enough to deliver the same.

Thank you.

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Attachment I

Percentages of Plastic Materials in Beach Debris

	Plastic Materials				
Location	Styrofoam (EPS)	Bags/Sheets (PE/PP/PVC)	Gear (PE/PP)	Bottles & Containers (PET/PVC)	Six-Pack Carriers (PE)
Alaska 1982	8.8		67.1		
Maine 1986	27.4	10.4	11.4	13.0	
Massachusetts 1986	5.7	36.5		13.2	
New Jersey 1986		6.2		38.6	5.2
Texas 1986	8.3	13.9		15.2	9.2
Oregon 1986	59.2		9.2		3.5
California	5.6*				3.3*

* Percentage by weight

TESTIMONY OF GARRY MAURO
COMMISSIONER OF THE GENERAL LAND OFFICE
STATE OF TEXAS

BEFORE THE
ENVIRONMENTAL PROTECTION SUBCOMMITTEE
ENVIRONMENT AND PUBLIC WORKS COMMITTEE
UNITED STATES SENATE

WASHINGTON, D.C.

September 17, 1987

Mr. Chairman and Members.

I am Garry Mauro, the Texas Land Commissioner. I am pleased to have this opportunity to present testimony regarding the problem of marine debris, particularly as it relates to Texas beaches. I will outline some of the sources of the Texas beach litter problem and some of the actions we are taking at the state level; I will also address some actions that I believe need to be taken, or at least considered, at the federal and international levels to alleviate this problem. Mr. Chairman, I would ask that the full text of my written statement, with attachments, be included in the record.

Ralph Waldo Emerson once said, "The health of the eye demands a horizon." To American eyes, no horizon conveys a greater sense of well-being than the juncture of land and sea. Our shorelines are wildly varied. In the Pacific, molten lava sets off fireworks of steam, spraying glass-like particles that the surf pounds into the black sand beaches of Hawaii. Along Washington's Boundary Bay, the cliffs, beaches, and gravel pits originated with the drift deposits of glaciers. Some Oregon beaches are grayish-green with basalt. Dramatic cliffs and shale and sandstone boulders command two-thirds of the California coast. In the Gulf of Mexico, the shore changes from the thin, sand-and-shell barrier islands of Texas to the silt jetties of the Mississippi Delta to the mangrove marshes along the curve of

Florida. On the Atlantic, a pattern of sand promontories, barrier islands, lagoons, and marshes extends from Cape Cod to Cape Canaveral; ancient forests grow right up to the dunes from Fire Island, New York, to Cumberland Island, Georgia. But increasingly, our extravagant coasts have an outrageous and demeaning thing in common: they are rapidly being fouled by the world's garbage.

My state of Texas is blessed with 377 miles of Gulf coastline including many beautiful white sand beaches. Those beaches provide recreation for Texans, attract tourists to our state, and contribute to the crucial habitat of our aquatic wildlife. However, garbage dumping, particularly from ships and vessels operating in the Gulf of Mexico, is wreaking environmental and economic havoc on the State of Texas. Tourism is now our second largest industry, and Texas beaches are a major attraction to tourists; consequently, the garbage that fouls those beaches has become a major economic concern. Texas coastal cities and counties currently spend more than $14 million annually just to pick up trash off our beaches. And despite the Herculean efforts of those local officials, many tourists leave Texas beaches disgusted by the filth they find there. Tourists spent over $16 billion in Texas last year. While only 18 of Texas' 254 counties border the Gulf of Mexico, over one-third of tourist dollars are spent and about one-third of the state's tourism jobs are located there. Visitors to our coastal areas obviously enhance the entire Texas economy.

A major reason for the severity of the beach garbage problem in Texas is the shallow, closed nature of the Gulf of Mexico. The tons of garbage dumped into the Gulf daily have a major detrimental effect on our ocean and coastal environment. Not only are fish, turtles, porpoises, birds and other wildlife dying in large numbers because of ingestion of and entanglement in the debris, particularly plastics, which pollutes their environment; our rookeries, bays, estuaries and other wildlife and marine life habitats are being seriously degraded by this inexcusable practice. Diving for fish, pelicans get tangled in plastic fishing lines and choke to death. In one noted incident, an infant pygmy whale washed ashore in Texas and died eleven days later of severe abdominal infection; in its stomach were a plastic bread wrapper, a corn chip bag, and a 30-gallon plastic garbage can liner. Sea turtles with entangled or mutilated flippers are far too common. Institutional dumping of garbage from ships and other vessels in the Gulf of Mexico and other areas of our marine environment must be stopped. Our beaches, many of which have more accumulated garbage than some cities, must be cleaned. And our wildlife and marine life habitat must be protected.

Speaking at the signing of the Water Quality Act of 1965, an angry President Lyndon Johnson said, "[t]he clear, fresh waters that were our national heritage have become dumping grounds for garbage and filth. They poison our fish; they breed disease; they despoil our landscape."

He continued, "[t]here is no excuse for a river flowing red with blood from slaughterhouses. There is no excuse for papermills pouring tons of sulfuric acid into the lakes and the streams of the people of this country. There is no excuse--and we should call a spade a spade--for chemical companies and oil refineries using our major rivers as pipelines for toxic wastes."

Were he alive today, I believe President Johnson would be equally angered by the currently legal and accepted practice of institutional dumping of garbage in our ocean by the world's shipping fleet and the resulting fouling of our beaches and coastal waters.

Let me begin by outlining some of the issues that must be addressed in order to effectively deal with institutional dumping of garbage from ships and vessels in our marine environment. I would first like to discuss the particular problems of the Gulf of Mexico and of Texas.

The Gulf of Mexico: The American Sea

The Gulf of Mexico is an especially important resource to the nation. The United States encloses the Gulf of Mexico on three sides. With a generalized coastline of 1,631 miles, the Gulf coastline is longer than the entire Pacific coast of California, Oregon, and Washington, and is equivalent to the distance from Newport to Miami along the Atlantic coast. Thus the U. S. derives a major benefit from the Gulf, and has the major responsibility for its management. The U.S. actively exploits its remarkable marine resources, both biological and mineral.

The Gulf of Mexico is an exceptionally productive sea, annually yielding over 2.5 billion pounds of fish and shellfish which represents approximately 40% of the total domestic commercial fishery landings. Four of the top five commercial fishery ports in the nation by weight, and six of the top ten ports by volume, are located on the Gulf of Mexico. The Gulf is also one of the few areas of the U.S. Exclusive Economic Zone which still harbors large quantities of unexploited fishery resources. The Gulf supports over one-third of the nation's marine recreational fishing, hosting 2.3 million fishermen who in 1984 made 16.4 million fishing trips.

The coastal estuaries, wetlands, and barrier islands provide important habitat for large populations of wildlife, including waterfowl, shorebirds, and colonial nesting seabirds. For example, the Gulf provides critical habitat for 75% of the migratory waterfowl traversing the U.S. and the extensive coastal wetlands of the Gulf comprise about half of the national total.

Also, the Gulf of Mexico has been and will continue to be critical to the nation's energy supply. More than 72% of the oil and 97% of the gas produced offshore has come from the Gulf. More than $56 billion in Federal revenues were generated between 1956 and 1983 as a result of Outer Continental Shelf (OCS) oil and gas development there. OCS leasing is second only to the Federal Income Tax as a revenue source for the U.S. Treasury. The Department of the Interior estimates that 78% of the oil and gas potentially available from the U.S. Outer Continental Shelf will be found in the Gulf of Mexico.

The Gulf is also vital to the nation's trade interests. Approximately 45% of U.S. export/import tonnage passes through Gulf ports, including three of the top five commercial ports in the country. Recently, the policy of homeporting portions of the Atlantic naval fleet throughout the Gulf has increased pressures on ports and waterways. The need to develop and maintain ports that are strategically critical to the nation's trade and defense interests requires extensive harbor and navigation dredging. In

1986, this vital maintenance activity nationwide produced 60 million cubic yards of dredged material and 70% of this was deposited in the waters and coastal areas of the Gulf. Homeporting could easily double this amount, as well as add significantly to the marine debris problem, particularly if the U.S. Navy continues its current practice of ocean dumping of all of its ship-generated garbage.

While the human population of the Gulf coast has been historically very sparse in comparison to the northeastern and southwestern coasts of the U.S., this is rapidly changing. Gulf states accounted for 35% of the U.S. population growth between 1980 and 1985. From 1970 to 1980 the population in coastal counties along the Gulf increased by 35%.

The waters of the Gulf of Mexico are affected by activities throughout much of the nation. Over 50% of the area of the contiguous United States drains into the Gulf. Thus, society's nutrients, wastes, and soils from Helena to Atlanta, from Albuquerque to Pittsburgh, and from Chicago to Tampa, eventually are washed into the Gulf of Mexico.

In short, the Gulf of Mexico provides an impressive wealth of resources to the United States and presents comparably great responsibilities to the nation. Therefore, the continued health and productivity of the Gulf must become a national priority.

Origins of Garbage on Texas Beaches

Texas beach debris has two obvious sources: that coming ashore from the Gulf of Mexico and that generated on land. A 1985 Texas Coastal and Marine Council report (copy attached) estimates that 75% to 90% of the trash on Texas beaches comes from offshore sources. The remaining 10% to 25% is deposited by beach visitors and onshore trash dumpers. A 1975 report by the National Academy of Sciences indicates that the vast majority of offshore debris originates from ships and vessels -- passenger ships, merchant ships, recreational boats, commercial fishing and shrimping boats, oil and gas platforms, supply boats, seismic and military vessels.

The recent odyssey of the now infamous Islip, New York garbage barge, the Break of Dawn, helped to raise in a dramatic way the nation's consciousness about the problems of disposing of our society's wastes.

However, the 3,186 tons of municipal garbage contained on that barge was a mere drop in the proverbial bucket compared to the garbage routinely and legally disposed of by the world's shipping fleets in our oceans. The worldwide rate of waste disposal in our oceans from offshore sources was estimated in the early 1970's by the National Academy of Sciences at 14 billion pounds per year. The world's merchant shipping fleet discards at least 4,800,000 metal, 300,000 glass, and 450,000 plastic containers at sea every day. And recreational boaters are estimated to generate one pound of trash per person each day. U.S. naval ships, which routinely dispose of their trash at sea, by the Navy's own estimate generate over 3 pounds of solid waste per man each day and some crews number over 5,000 men.

Careless expedience accounts for much of the dumping. Also, the U.S. Department of Agriculture, fearing entry of fruit flies and other foreign microbes, prohibits foreign ships from disposing of garbage in our ports unless it has been burned or steam-sterilized. But few ships are equipped to meet those standards, and few U.S. ports currently have U.S.D.A. approved facilities for waste disposal. According to the most recent U.S.D.A. figures, of 73,614 foreign ship landings in American ports last year, only 1,731 resulted in off-loading of any garbage. Only 90 of those off-loadings occurred in Texas ports. Thus, it is clear that virtually all shipping garbage gets dumped at sea!

Direct ocean dumping of debris from land-based sources and indirect sources, such as rivers, streams and land run-off, deposit more trash in the Gulf. Oil and gas rigs and platforms and the supply vessels that support them contribute to the problem. At present, only 104 oil and gas drilling or production platforms are located in state waters off the Texas coast, and only 9 of those are manned. Federal waters off the Texas coast are dotted with another 295 platforms. However, the offshore platforms in state and federal waters off Louisiana number over 3,100. Those platforms are serviced by over 800 vessels including cargo boats, standby boats, field service boats and crew boats as well as the seismic vessels operating in the Gulf.

For our purposes, it is useful here to differentiate between "garbage" and "solid waste." Garbage may be defined as organic waste, such as unused food, that decomposes or is eaten by fish in the sea. Solid waste is non-organic, man-made material that does not biodegrade: plastics, metal, glass, packing materials, styrofoam, etc.

Offshore dumping of solid waste imperils all American shorelines---Atlantic, Pacific, and Gulf. The problem is particularly acute in Texas because our coast is the natural dumping point for the northern and southern longshore current complex. These currents sweep the entire eastern portion of the Gulf of Mexico and converge on a 10-mile (27 degrees N Lat.) stretch of beach in the middle of Padre Island National Seashore near Corpus Christi, Texas. These currents which transport the sand necessary to make our beautiful beaches also transport and deposit both floating and subsurface suspended debris all along Texas beaches north and south of this convergence zone. A map of these currents (copy attached) will quickly show you why any solution to the Texas beach garbage problem must deal with all sources of garbage dumped anywhere in the Gulf of Mexico. The currents ensure that solid waste discharged from oil and gas platforms off Louisiana or from shipping off Mexico has a very good chance of ending up on a Texas beach. Texas beach garbage, however, is not just a local or regional problem, and any solutions must be national and international in scope.

Types of Beach Litter

Beach litter obviously includes many natural products such as trees, driftwood, fish, birds, shells, sargassum weed and other natural refuse. The aesthetic and environmental consequences of this type of litter are usually not major because of their natural origins. In contrast, man-made debris and trash, particularly plastic and glass materials, are clearly more objectionable and pose a greater environmental hazard. The cumulative evidence of the non-degradable nature of man-made objects makes such debris aesthetically and environmentally unacceptable. Some plastics may take over 400 years to decompose. Beach garbage reflects a continuing tradition of mankind's use of the oceans as vast sinks for the disposal of its wastes. Man-made non-degradable items are the major components of the debris cluttering Texas beaches and ultimately, can only be controlled at their sources.

Three types of litter have become a particular source of concern:

- Long-lasting plastic items, such as bags, sheeting, nets, strapping bands, six pack rings, computer tape rings, fishing lines, and pellets, many of which are hazardous to marine life and shore birds.
- Drums of hazardous chemicals either illegally dumped or accidentally dropped into the sea.
- Styrofoam, glass, metals, and other man-made, non-degradable items.

Actions Taken by the State of Texas to Help Alleviate the Problem

On September 20, 1986, I participated in a coastwide beach cleanup in Texas sponsored by the Center for Environmental Education. On that day 2,800 volunteers picked up over 124 tons of garbage off 122 miles of Texas beaches in just three hours. On April 25 of this year over 3,600 volunteers picked up an additional 140 tons of trash from 150 miles of Texas beaches. That should give you some idea of the magnitude of our problem!

Innovative action at the state level can aid in alleviating this problem, and the State of Texas has begun to do its share. The Texas General Land Office has revised its regulations (copy attached) and its lease contracts governing submerged lands off the Texas coast to prohibit discharges of solid wastes from oil and gas drilling and production platforms and from seismic vessels operating in state waters. We have asked oil and gas operators in state waters to present detailed solid waste management plans. We want to know how these companies propose to collect, store, transport, and dispose of the trash generated on platforms and supply vessels. Flexibility of planning is in our common interest, thus different methods of disposal are acceptable. But once these companies have devised solid waste management plans, they must strictly comply with them. Companies engaged in offshore energy activity in Texas waters may now expect to have their state operating permits or leases canceled if they dump solid wastes into the Gulf of Mexico. Texas General Land Office inspectors now routinely inspect offshore operations to insure that no solid waste is being dumped from oil and gas platforms or seismic or supply vessels.

The Texas Department of Highways and Public Transportation has launched a high-profile and highly successful "Don't Mess With Texas" anti-litter public relations campaign. That campaign has been credited with a 34% reduction in highway litter since its inception and has dramatically raised the public consciousness of litter problems in general. As a part of the "Don't Mess With Texas" campaign, public service television advertisements were filmed on Texas beaches to focus specific attention on the beach litter problem. We at the Texas General

Land Office have taken that public awareness campaign one step further, by initiating our own "Don't Mess With Texas Beaches" campaign to help in restoring our beaches as playgrounds rather than dumping grounds.

Other steps taken should have a significant impact in both the short term and the long term. We have assembled a group of interested citizens who have devised and are implementing the Texas Adopt-A-Beach Program. (guidelines attached) This program asks civic groups, corporations, and individuals to assist in cleaning up the hundreds of tons of debris currently covering our Texas beaches by "adopting" a particular segment of beach and agreeing to clean it a minimum of three times a year. The program, operated at the local level through volunteer county coordinators, will not only go a long way toward cleaning up the existing filth on Texas beaches; it will also help to stay abreast of the new tides of debris that wash ashore each day. At present 171 out of 172 miles of Texas beach have been adopted by 118 groups. This amounts to over 99% of the accessible beaches in our state. However, all concerned recognize that Adopt-A-Beach is only a short term answer.

I am very pleased with the response to both our new regulations regarding offshore oil and gas activity and to our Adopt-A-Beach program. But even if completely successful, these programs can deal with only about 20% to 40% of the debris on Texas beaches. The remaining 60% to 80% can only be dealt with by federal and international action.

Over the long haul, solid waste must be kept out of the water. Institutional dumping in the oceans must no longer be tolerated. Numerous studies, as well as the analysis by the Center for Environmental Education of the trash collected during the Coast Week beach cleanup last September, confirm that most of the debris on Texas beaches originates offshore. It is estimated that only 10% to 15% has come from offshore oil and gas operations, and with the combined efforts of the Texas General Land Office, the U. S. Minerals Management Service, and the oil and gas operators themselves, that percentage is being rapidly reduced. Similar cooperative action must be taken to stop garbage dumping from ships and other vessels.

As you know, the Senate is currently considering ratification of a treaty known as Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL-Treaty Document No. 100-3). This treaty basically does four things: (1) it prohibits the ocean disposal of all plastics, (2) it prohibits the disposal of other floating solid wastes within 25 miles of the nearest coastline, (3) it requires that garbage disposal facilities be provided at all ports and (4) it designates certain "special areas" where no solid waste dumping is allowed. The presently designated "special areas" are the Mediterranean, Red, Black, and Baltic Seas and the Persian/Oman Gulfs: all shallow, closed basins with heavy shipping traffic.

The Gulf of Mexico, which shares these same characteristics, is not currently designated as a "special area." However, we hope to change that in the near future. At the February meeting of the International Maritime Organization in London, the U.S. delegation announced its intention to present an amendment to Annex V to designate the Gulf of Mexico as a "special area." That amendment will be considered by IMO at its December 1987 meeting. The Texas General Land Office contracted with the Center for Environmental Education to provide the scientific study necessary to document the need for a "special area" designation. That study has been completed and was submitted to the U.S. Coast Guard last month for its review. It is my belief that the study will ensure that an accurate and adequate case is made to the IMO in support of the amendment request.

Organizational support for "special area" designation for the Gulf, as well as ratification of Annex V and passage of effective implementation legislation has been formally expressed by several important groups. At its May meeting in Seattle, the Coastal States Organization, which is comprised of the gubernatorially appointed representatives of the 35 coastal states, commonwealths and territories, unanimously passed such a resolution. (copy attached) In January the 23 state land commissioners who make up the Western States Land Commissioners Association passed a similar resolution, (copy attached) as did the National Wildlife Federation at its March membership meeting and the Sportsmen's Clubs of Texas at its April annual meeting.

Possible Solutions

The marine debris problem exists in part because of the lack of clear jurisdiction over the issue by any state or federal agency. Also, a myriad of laws, treaties, and regulations complicate the problem. No one, it seems, has been able to pull together all of the various federal agencies involved to formulate a comprehensive plan of action. The implementation legislation currently under consideration by this Committee is clearly a significant step toward establishing such coordinated action and Senators Lautenberg, Chafee and Stevens are to be commended for this demonstration of strong leadership on this important subject. I know that you will continue to press for implementation of a comprehensive plan to remedy all aspects of this problem. I pledge to you that we in Texas will do all in our power to assist with that effort.

I do not claim to have all the answers to this complex problem. However, I would like to take this opportunity to raise some specific issues that I believe need to be addressed.

Probably the most important and difficult issue concerns how to accomplish the United States Department of Agriculture's legitimate goal of keeping harmful foreign insects and microbes out of this country without encouraging ships to dump their garbage in the ocean before entering U.S. waters. This ocean dumping of solid waste to avoid USDA inspection clearly spoils our beaches and may also be allowing some of those insects and germs to wash ashore. It has been speculated that fire ants may have been introduced into this country by floating in on garbage dumped from foreign ships. That must change -- not only to protect our beaches but also to guarantee that pestilent insects and germs do not invade this country.

Clearly, flexibility of planning and regulation is in our nation's interest. When the U.S. ratifies Annex V of the MARPOL treaty, a sufficient number of the world's shipping nations will have ratified to make the treaty international maritime law. When the treaty comes into force, ships can no longer legally discharge plastics in any ocean. They can discharge other floating solid waste no closer than 25 miles from Atlantic and Pacific shores. And, if it is designated as a "special area", within the closed Gulf of Mexico, they could not dump any kind of solid waste at all. Those requirements are not unreasonable; in ratifying Annex V, 28 countries have already accepted the equivalent difference between managing garbage and debris in the Indian Ocean and managing it in the Mediterranean Sea. But the different requirements do impose different demands.

The answer, perhaps, is a framework of solid waste management plans similar to those developed by the State of Texas and its client offshore oil and gas producers. Each ship should be required to devise and strictly adhere to a plan for disposal of its solid waste, taking into consideration ship design and function, crew size, port differences and all other relevant variables.

To make any solid waste management plan work, however, facilities to steam-sterilize or incinerate ship garbage must be available. The question is how they should be provided. Ships could be required or encouraged to install shipboard incinerators. Some already have and are currently utilizing such onboard facilities. However, for most ships, the provision of facilities in each port to allow those ships to off-load their garbage for proper processing and disposal, coupled with a legal requirement for such off-loading, would appear to be a more logical and practical alternative. After all, there are only three ways to dispose of ship-generated solid waste: (1) on board incineration, (2) off-loading in port or (3) dumping in the ocean. Since we have agreed that the latter is no longer an acceptable method of disposal, our task is to determine how to implement a plan for either on-board incineration or off-loading and proper disposal.

As we are well aware, both the states and the federal government are experiencing significant budgetary problems. Therefore, any solid waste management plan which would require significant outlays of public money to provide disposal facilities in port is not likely to succeed. At present, the USDA has approved and supervises plans for disposal of garbage from international flights at all major international airports. In most cases, this is done on a contractual basis by the airlines and private-sector waste management companies. This method accomplishes USDA's legitimate objective of keeping pestilent insects and foreign microbes out of the U.S. and does so without significant economic burden to either the garbage generator (in this case, the airline) or the American taxpayer. I see no reason why a similar cost-efficient, common sense program could not be established to deal with ship-generated garbage at American ports.

The next significant question becomes how to ensure that ships actually off-load their garbage for proper disposal rather than continuing their current practice of dumping it at sea. The prospect of the Coast Guard or any other agency patrolling the merchant shipping or fishing fleets in order to ticket garbage dumpers seems to me quite impractical. First, the Coast Guard has higher priorities, such as interdiction of drug traffic, and actually catching ships who dump their garbage in the middle of the night would be a most difficult if not impossible assignment. Additionally, even if a violator was apprehended and ticketed, use of the federal criminal justice system to convict and punish garbage dumpers would only add another burden to an already overburdened system. The most likely result would be to ensure that no real deterrence would occur.

However, an administrative requirement that, as a part of the port entry process, a ship be required to present and off-load its garbage, or to produce acceptable evidence that its garbage either has been properly incinerated in shipboard incineration facilities, or previously off-loaded at a certified reception facility seems to me to present a reasonable, workable alternative. The specific outlines of such a requirement should, in my view, be the subject of administrative rules promulgated by the proper enforcement agency and should provide for a reasonable, subjective assessment by the enforcing agency of a ship's compliance with its solid waste management plan. A ship captain should be required to make a daily entry in the ship's log noting the time of its daily garbage disposal and certifying that the disposal has been done in accordance with Annex V and U.S. law.

The objective of such requirements is to provide incentives for changing a long-standing behavioral pattern in the maritime industry. For thousands of years, ships have routinely disposed of their garbage in the world's oceans. The prevailing adages have been "out of sight, out of mind" and "the solution to pollution is dilution." What we have learned, however, is that like most easy answers, these simple "solutions" do not work.

Education about the true impact of ocean disposal of ship garbage must be an integral part of any long-term effort to eliminate this problem. We must change behavioral patterns that have been accepted for centuries. Incentives for changing those established patterns of behavior must be provided and, as in most cases, some of those incentives can be negative, but most must be positive. Users of our marine environment must be educated about the consequences of their actions and encouraged to change their ways. Such an effort must have the full support and active participation of the affected industries as well as all levels of government and an informed public. Both ocean dumping and beach littering must be made unacceptable and unprofitable behavior. It is time to stop bemoaning what a difficult problem we face and pointing fingers at other offenders and instead begin to take aggressive, positive steps toward solving the problem.

I earlier compared our current situation regarding ocean dumping of garbage from ships to the situation we faced in the 1960's regarding inland water pollution. At that time it was, of course, common practice for our cities and industries to have open sewers running into our streams, rivers and lakes. The first step in that pollution battle was to close those sewers and begin some kind of pre-discharge treatment. Technical fine tuning, such as effluent monitoring and regulation, came much later in the process. At this point, my primary concern is closing the open sewers. Each pound of garbage off-loaded in port is one pound our local cities and counties do not have to pick up off our beaches. The numerous options for workable and enforceable solid waste management plans will unfold once their necessity is acknowledged. Fine tuning of the procedures for off-loading and treatment can come at a later date, but we must begin to attack the problem seriously and now.

We Texans like to think of ourselves as practical, common sense problem solvers. We want to play a significant role in solving the problem of ocean dumping of garbage and marine debris. But because this problem is not just a Texas or a Gulf of Mexico problem, solving it will require national and international action. Annex V and its implementation legislation will provide the framework for those national and international solutions. With your help and your active support, one day soon clean oceans and clean beaches can again be a blessing and a way of life for all Americans. When that happens, the people of Texas and the rest of the country will have you to thank.

Thank you again for this opportunity to present testimony.

Testimony of James J. Kirk
Director of Port Department
The Port Authority of New York & New Jersey
Before the Senate Environmental Pollution Subcommittee
September 17, 1987

My name is James Kirk and I serve as Director of the Port Department of The Port Authority of New York and New Jersey. The Port of New York and New Jersey is one of the largest in the country with about 6000 ship arrivals each year of which 60 percent dock at Port Authority facilities, the remainder docking at private or municipally owned piers. With respect to those marine terminals owned by The Port Authority, virtually all are leased to private terminal operators who in turn provide services to the vessels.

We appreciate this opportunity to comment on legislation pertaining to Annex V of MARPOL for the prevention of pollution by garbage from ships. We support the goals of the legislation and find ourselves in particular agreement with the terms of Senator Lautenberg's bill, S. 633.

As applied to the United States, Annex V of MARPOL, the International Convention for the Prevention of Pollution from Ships, 1973, prohibits the disposal into the sea of all plastics and requires that the disposal into the sea of all garbage shall be made as far as practicable from the nearest land but in any case prohibited if the distance from the nearest land is less than:

(i) 25 nautical miles for dunnage, lining and packing materials which will float.

(ii) 12 nautical miles for food wastes and all other garbage including paper products, glass, metal, bottles, crockery, and similar refuse. If this material is passed through a fine grinder, disposal shall not be closer than 3 nautical miles from land.

The Port Authority supports the goals of Annex V and the elimination of plastic in the ocean and the disposal of other waste at a safe distance from land. The maritime industry has been working towards this goal for many years. Many modern cargo and passenger ships have incinerators on board and use them to burn all waste generated on the ship. Ships without incinerators usually dispose of their waste a safe distance from land.

Modern container ships and tankers are always on the move and rarely stay in port more than a day so that storing their waste on board ship for a day or more for disposal at sea does not pose a problem. Very few general cargo ships or bulk carriers spend more than a few days in port and they also have facilities on board to store their waste until they return to sea.

The maritime industry will have little difficulty implementing Annex V. However, some United States ports and terminals may have problems because of existing regulations of the Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) on the disposal of foreign food waste and of any products that have come in contact with this waste. To the best of my knowledge all ports can provide facilities or services for the disposal of plastic and other waste not contaminated by food but the Department of Agriculture requires that food waste from ships that have touched a foreign port be either sterilized or incinerated to ash. This is a worthwhile precaution to prevent the introduction of certain bacteria to our country, however, not all ports and terminals have such facilities available to them or have had a demand for them.

As the testimony of the American Association of Port Authorities indicates, forty percent of the AAPA members do not presently have APHIS approved capability, including a few of the larger ports in the country. The majority of public port authorities without available facilities are smaller members without financial resources.

The Port of New York/New Jersey has the two extremes in our harbor; incineration facilities that meet the Department of Agriculture standard are available on the New York side of the harbor and used regularly. The cruise ships that call at the Passenger Ship Terminal generally have incinerators which are used to burn all garbage except that generated the day the ship is in port. This garbage is removed by a private contractor and burned in a local incinerator in the City of New York. (I should note here that we cannot recall a cargo ship ever sending food waste or other garbage ashore on the New York side of the harbor.)

In contrast, the New Jersey side of the harbor does not have any incinerator available for the disposal of food garbage from ships. Newark

Airport, operated by the Port Authority, has a small incinerator which is used to burn garbage from aircraft but which does not have any excess capacity. A resource recovery plant is planned to be built near Port Newark but will only accept solid waste from the county in which it is built and will not accept foreign or out of county garbage. Local regulations do not permit sending food garbage from New Jersey to an incinerator in New York. As I noted earlier, neither I nor any members of our staff or of the terminals in our harbor can recall a request from a ship docked in the New Jersey side of the harbor to dispose of food waste or other garbage ashore. We believe that that fact is not inconsistent with the goal of Annex V.

Unless there is a strike or a similar event delaying many ships in port for a long period, we can see no demand for a food waste disposal facility in the New Jersey side of New York Harbor even with Annex V in force. As a footnote, I should bring to your attention the growing cost of waste disposal in the cities around New York Harbor. Due to the recent closing of landfills in Northern New Jersey, the cost of the disposal of trash from the port area is presently over $30 per cubic yard, or $100 per ton, a disincentive for landside disposal of ship wastes.

When Annexes I and II of MARPOL were implemented, the Port authority and all other terminals had to document that facilities were available to receive and dispose of the oily bilge and ballast water. The size of the facility required was based on the number of ships that called at the terminal. As private operators were available for this, the terminals were able to meet this condition. To our knowledge, there have been no requests for the disposal of oily waste water from ships docked in

New York Harbor since Annexes I and II were implemented.

Mr. Chairman, our major concern is that the legislation or regulations implementing Annex V may ultimately require facilities in place for the disposal of garbage and food waste from ships, the size to be based on the number of ships that call at the terminal in a year. If so, the terminal operators, including The Port Authority for those few facilities it operates, would have to construct one or more incinerators sized large enough to accommodate the possible need of the ships. However, in all probability these incinerators will not be used. The ships will not deposit their food garbage ashore. It will be cheaper and easier for the ships to deposit their food waste at sea, in conformity with Annex V, than to pay to have it incinerated ashore. Therefore, the cost of constructing incinerator facilities can not be reasonably expected to be covered by fee-paying users for whom the facilities would be intended.

Furthermore, based on past experience, we expect little, if any, food and non-food garbage to come ashore from cargo ships in the Port of New York/New Jersey. There is a possibility that some plastics may come ashore here, and there would be no problem demonstrating that disposal facilities are available. However, because of the disposal cost, we believe plastics, if any, will be retained on board the vessel to be brought ashore at ports where the disposal expense is comparatively lower.

In summary, Mr. Chairman, the Port Authority supports the goals of Annex V as well as the legislation before this committee. We believe that the maritime industry will have little difficulty implementing them since the proposed regulations, except for the disposal of plastics, generally agree with the industry's present practice of disposal at sea at a reasonable distance from land. In the case that ships want to dispose of plastics and non-food waste, the ports in our country can provide the necessary disposal facilities, usually through private contractors. However, certain ports, and the New Jersey side of the New York/New Jersey Harbor is one of them, will have difficulty providing incineration facilities for the disposal of food wastes, facilities that will, in all probability, never be used and thus be an unnecessary financial burden as well.

We respectfully request that the legislation and regulations not require disposal incinerators to be constructed. Instead we suggest that the terminals be required to guarantee that disposal facilities or services for food garbage and other waste are available to the vessels through the terminal operator if adequate advance notice is given. Also, public port agencies serving in a landlord capacity to terminal operators should not be involved in that process. Rather, it should be left to the operators, public or private, already involved in providing services to vessels. Finally, we also would urge that committee report language, in describing how the Administration should implement this legislation, will reflect the AAPA request for flexibility and creativity to deal with the different circumstances in the many public ports of this country.

Thank you.

The Entanglement Network

Sponsored by:
American Cetacean Society
Animal Protection Institute of America
California Marine Mammal Center
Center for Coastal Studies
Center for Environmental Education
Cetacean Society International
Defenders of Wildlife
Environmental Defense Fund
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The Humane Society of the United States
International Wildlife Coalition
Maine Audubon Society
Monitor Consortium
National Audubon Society
Natural Resources Defense Council
North Wind Undersea Institute
The Oceanic Society
Society for Animal Protection Legislation
Whale Center
World Wildlife Fund

TESTIMONY OF

THE ENTANGLEMENT NETWORK COALITION

on behalf of

AMERICAN CETACEAN SOCIETY
AMERICAN HUMANE ASSOCIATION
AMERICAN SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS
ANIMAL PROTECTION INSTITUTE OF AMERICA
CALIFORNIA MARINE MAMMAL CENTER
CENTER FOR COASTAL STUDIES
CENTER FOR ENVIRONMENTAL EDUCATION
CETACEAN SOCIETY INTERNATIONAL
DEFENDERS OF WILDLIFE
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THE SOCIETY FOR ANIMAL PROTECTIVE LEGISLATION
SUNCOAST SEABIRD SANCTUARY
THE WHALE CENTER
and
THE WORLD WILDLIFE FUND

BEFORE

THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
HEARING ON S. 559, S. 560, AND S. 633:
MARINE PLASTIC POLLUTION, MARPOL ANNEX V AND RELATED ISSUES

SEPTEMBER 17, 1987

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Mr. Chairman, on behalf of the Entanglement Network Coalition (the Network), including the American Cetacean Society, the American Humane Association, the American Society for the Prevention of Cruelty to Animals, the Animal Protection Institute of America, the California Marine Mammal Center, the Center for Coastal Studies, the Center for Environmental Education, the Cetacean Society International, Defenders of Wildlife, Earthtrust, the Environmental Task Force, Friends of the Sea Otter, the Fund for Animals, Greenpeace U.S.A., HEART, the Humane Society of the United States, the International Fund for Animal Welfare, the International Wildlife Coalition, the Living Ocean Society, the Long Term Research Institute, the Maine Audubon Society, the Massachusetts Society for the Prevention of Cruelty to Animals, the National Audubon Society, North Wind Undersea Institute, the Oceanic Society, the Sierra Club Wildlife Committee, the Society for Animal Protective Legislation, the Suncoast Seabird Sanctuary, the Whale Center, and the World Wildlife Fund, we thank you for the opportunity to submit this testimony.

The Entanglement Network, represented in part by the membership listed above, supports S. 559, ("The Plastic Waste Reduction and Disposal Act of 1987"), S. 560, ("Implementation of the Provisions of Annex V to the International Convention for the Prevention of Pollution from Ships as Modified by the Protocol of 1978" [amended 3 August 1987]) and S. 633 ("The Plastic Pollution Control Act of 1987"). We applaud your efforts in holding this hearing to address legislation that will begin to deal seriously with the many facets of the plastic pollution problem, and we thank the Members of Congress who support these efforts. We have several recommendations to make that we believe will enhance these important bills.

BACKGROUND

As you are well aware, our oceans, beaches, rivers, and estuaries have become a dumping ground for a rising tide of plastic pollution -- a tide that is killing untold millions of nontarget fish and wildlife each year. The plastics problem, although growing at an alarming near-exponential rate, has only recently received national attention through the media, magazines, and newspapers such as the New York Times ("Invasion of Trash from the Sea Overwhelming Coastal States"; Attachment A) and the U.S. News and World Report ("Man-made killer of the Sea"; Attachment B). The problem, unfortunately, is a global one, but the United States is a major contributor, disposing of perhaps one-third of the plastic refuse discharged into Northern Hemisphere oceans today.

In its present state, plastic is durable, persistent, and virtually nondegradable, taking up to 450 or more years to deteriorate. A few degradable plastics are being manufactured in this country (e.g., photodegradable EcoPlastic six-pack rings and Good Sense plastic trash bags) and elsewhere (biodegradable PHBV packaging in Great Britain and photodegradable ECOLYTE polystyrene food packaging in Canada); and limited research is being conducted on photo-, bio-, and chemodegradable plastics; but much more research and development are needed. Chitosan-derived biodegradable plastic, for example, made from the chitinous exoskeletons of crustaceans, mollusks, insects, and others has great potential but needs further testing.

Marine plastic debris comes in two forms: 1) **manufactured compounds** such as plastic fishing nets, monofilament fishing line, six-pack yokes, strapping bands, bags, sheeting, cups, and other products; and 2) **raw plastic particles,** which are a byproduct of the land-based industry. The amount of raw plastic produced in this country alone is astounding: 48 billion pounds of resin in 1985 (or 1.2 trillion cubic inches of plastic, nearly double the combined output of steel, aluminum, and copper), and climbing. Raw plastic pellets resulting from the manufacture of finished products often are dumped into sewer systems, most of which are overworked and many of which are outdated, inadequate, or improperly maintained, or are suspected of not complying with regulations. As a result, sewage systems are often bypassed during peak, high-demand periods such as heavy rains and storms, and, in some cases, these plastics are not adequately trapped in sewage screens and weirs during normal operations. In addition, other raw plastic is disposed of in landfills, where it may blow or wash into the marine ecosystem. Much of the plastic thus ends up in the ocean.

Many of the products created from raw plastic -- as well as the raw plastic pellets themselves -- are extremely injurious to marine vertebrate organisms. Plastics alone may be as great a source of mortality to marine mammals, sea turtles, and seabirds as are oil spills, heavy metal contamination, or other man-induced toxic materials. Through both active fishing and passive means, plastics kill, debilitate, or injure marine vertebrate (and some invertebrate) organisms in one of several ways. Capture of nontarget animals in active fishing nets is termed **incidental take** or **bycatch.** Various species of marine mammals and many species of seabirds are lost to this fishing problem. The term **entanglement** refers to the capture and entrapment of numerous freshwater and large numbers of coastal and pelagic marine organisms in lost or discarded plastic debris which often leads to death of the organisms. Among the most egregious sources of entanglement are "ghost nets" -- lost or discarded nets or net fragments -- which can continue to "fish" for years. They sometimes sink from the weight of dead animals, seaweed, or barnacles and continue to "fish" on the oceans' bottoms. They also may ball up and continue to float, or they wash ashore. Packing bands, six-pack yokes, nets, net fragments, and other plastics bind and/or strangle virtually every species of marine mammal, sea turtle, and seabird, and many varieties of fish. **Debris ingestion** is a third major problem for marine organisms. Growing documentation of the fatal impacts of plastic bag ingestion on threatened and endangered sea turtles is a matter of grave concern. To date, 50 species of seabirds are known to ingest plastic particles. In one study on Laysan albatross, up to 90% of the birds examined had consumed plastic. In a study on marine fish, up to 30% of those examined had eaten plastic pellets. The pellets obstruct digestive tracts, cause ulcerations, and may result in starvation.

From what we know so far, and this is only a small fraction of the overall picture, an estimated 300,000 - 700,000 seabirds in the North Pacific waters alone die each year in nets, packing bands, and six-pack holders, or as a result of eating floating plastic pellets which are probably mistaken for food. At least 100,000 marine mammals suffer similar fates each year off our shores, including sea lions, seals, endangered great whales, endangered Florida manatees, the critically endangered Gulf of California harbor porpoise (vaquita), and others.

In addition to their negative impacts on fish and wildlife, plastic garbage-strewn beaches are aesthetically distasteful, discourage tourism, and are costly to clean up. Plastics also foul boat propellers, block cooling intake vents, snag fishing equipment, entangle our military submarines, and endanger divers.

The origins of this litter are diverse. Ten years ago, the National Academy of Sciences estimated that 6.5 million metric tons of litter were dumped into the world's oceans each year -- that amount was almost three times the weight of the entire United States commercial fish catch in 1985. According to more recent estimates, the world's merchant fleet dumps 450,000 plastic containers into the oceans each day. Fifteen major gillnet fisheries in the North Pacific alone use nets greater than 105,000 miles in total length. The Japanese, representing only one of these 15 fisheries, lose or discard each season an estimated 650- 1,600 miles of net just in their salmon drift gillnet fishery. In our coastal U.S. waters, recreational boaters are estimated to throw overboard an average of 1.5 pounds of garbage per person per day. In 1984, 9.4 million recreational vessels were registered in the U.S., and in 1977, more than 50 million people in the U.S. went on a recreational boat at least once.

Now is the time to begin a serious effort to clean up our oceans.

DISCUSSION

Recognizing the problem of plastic marine debris is an international one requiring international solutions, we note that the United States currently has an opportunity to play a very instrumental role in influencing international regulation of the problem of plastics in the marine environment. U.S. ratification of Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) constitutes a critical step toward achieving that goal. The legislation at issue today is especially important because it will be instrumental in achieving U.S. ratification of Annex V and an international response to this serious environmental concern.

The Network is hopeful that Senate advice and consent for U.S. ratification of Annex V will be achieved in the near future. U.S. ratification would send a clear message to the international community of the U.S. commitment to solving the plastic pollution problem and is necessary to ensure continued international efforts to that end.

We are pleased that you have called a special hearing to focus on the problem of plastic and marine debris and implementation of Annex V's prohibitions. Clearly, without the necessary measures for adequate implementation and enforcement, a prohibition on dumping of plastics has little hope of solving the problem. In short, the effectiveness of the legislation will be directly dependent upon the strength of such mechanisms.

We recognize at the outset that the wide variety of ship designs, sizes and uses makes implementation of Annex V a special challenge. For this reason, we believe that it is appropriate to strive for a high degree of flexibility in our initial attempts to implement the Annex.

Other than a provision that states ensure that adequate reception facilities are available to receive wastes under Annex V, no specific measures to facilitate mitigation of the marine debris problem are offered in the Annex. Annex V leaves to vessel owners the choice of whether to refrain from bringing plastic packaging on board, to install onboard garbage incinerators or to utilize reception facilities for discharge of plastics on shore. At the 24th Session of the Marine Environment Protection Committee (MEPC 24; February 16-20 1987), a working group was convened to discuss effective means for implementing Annex V. During that working group session, the United States offered to draft guidelines for the next session of MEPC (MEPC 25; 30 November - 4 December 1987).

Annex V represents a global common denominator and states should view its provisions as providing minimum guidelines. Too often the minimum guidelines established internationally are treated in practice as the maximum standards to be applied. However, domestic legislation can and should go beyond the minimum guidelines of Annex V in order to ensure that the special problems and needs of individual states are effectively addressed.

We recognize a concern expressed by the U.S. Coast Guard, that unilateral action by one state in the area of maritime matters may be frowned upon by some in the international community who value uniformity of standards and procedures over protection of the marine environment. We note, however, that the disapproval of the international community has not prevented the United States in the past from instituting more stringent requirements than those accepted internationally.1 (footnotes cited at end of document) There are, however, enforcement and implementation measures that go beyond Annex V, which are not likely to be objectionable to the international shipping community. These and other measures comprise the focus of our comments.

Before addressing implementation and enforcement measures specifically, we would like to address a more general issue. We understand that the Administration has proposed and that S. 560 has been revised to implement Annex V through the Act to Prevent Pollution From Ships (APPS), 33 U.S. C. 1901 et seq. As the legal mechanism for implementing Annexes I and II it is a logical choice for implementing Annex V as well. Implementation of Annex V by amendment of the APPS may be more expeditious than enacting new legislation, although such amendments should provide specific enforcement measures as discussed below. At the same time, all of the necessary provisions for implementation could be included in free-standing legislation. The Network is more concerned about substance than form and we could support either free-standing legislation or implementation through the APPS.

Education

Perhaps the most important enforcement tool we can employ is education. Continued efforts to provide public information, education and training programs on the plastics pollution problem are a critical initial step in eliminating marine debris. Awareness of the serious nature of the problem encourages mitigation efforts. Special education and training programs should be targeted for various segments of the maritime community, such as merchant shippers, the fishing industry and recreational boaters. One example is provided by those programs sponsored by the National Marine Fisheries Service Northwest and Alaska Fisheries Centers through its Marine Entanglement Research Program to educate members of the fishing industry in their region. Such programs must be continued and expanded among fisheries in the Atlantic, Gulf of Mexico, and Pacific Basin as well. Similar programs directed toward other segments should be implemented.

Professional associations can play a valuable role in education efforts, by publishing information about the problem and mitigation measures in professional journals and other association publications, or by sponsoring training sessions or seminars to address related issues of particular concern to its members.

Recognition and understanding of legal obligations under Annex V and domestic implementing legislation should be made a part of licensing requirements for seafarers (e.g. master's license for uninspected vessels), and should be a part of the curricula of the Coast Guard Auxiliary.

A notice of duties and obligations arising from Annex V, domestic implementing legislation and potential penalties for noncompliance should be posted on all inspected U.S. vessels in an appropriate location as a continual reminder to exercise diligence in properly disposing of ship-board waste. We ask the

Committee to provide in its report that the Commerce Department's regulations under any implementating legislation would be expected to require such notices to be posted.

Prohibited Acts

The Network believes that the United States should apply the prohibitions of Annex V of MARPOL to the fullest possible extent. S. 560, as amended, would govern actions by persons on board U.S. flag vessels, wherever they are located; persons on board foreign vessels of MARPOL parties within the U.S. navigable waters; and persons on board foreign vessels of non-parties to MARPOL within the U.S. 200-mile Exclusive Economic Zone (EEZ). In our view, implementing legislation should reach farther and be applicable to any person subject to the jurisdiction of the United States. MARPOL is designed to reflect a jurisdictional reach agreeable to all signatories and accordingly does not reach as far. However, where U.S. legislation can and customarily does reach farther, it should. In addition, an expansion of geographic jurisdiction with regard to a prohibition on dumping of plastic is consistent with Annex V and would indirectly benefit the U.S. merchant marine by eliminating any incentive under the bill for U.S. flag vessels to switch to foreign registry. Accordingly, we urge inclusion in Annex V implementing legislation of a provision making it unlawful for any person subject to the jurisdiction of the United States to dispose of any material on the high seas from any ship if such disposal would constitute a violation of Annex V.

In this regard, we support the language set out in Sections 102(a) and 202 of S. 633 to the extent that it does not limit application of the prohibition to persons on ships. However, Section 102(a) is limited by its application only within the 200-mile EEZ. This same prohibition could be extended to the high seas and apply to any person subject to U.S. jurisdiction.

Enforcement Jurisdiction

The issue of U.S. authority to enforce a prohibition on disposal of plastics in the EEZ has been raised in the context of legislation originally proposed by the Administration and reflected in proposed legislation being considered today.

Section 103(c) of S. 633 provides that enforcement against foreign flag vessels be carried out "consistent with obligations of the United States under international law." We note that the obligations of the United States in this regard are open for interpretation with respect to foreign flag vessels outside of ports or offshore terminals. However, we believe there is a strong legal basis and sound policy reasons for exercising enforcement authority over foreign flag ships within the EEZ, and call upon the Committee to recognize the existence and persuasiveness of this authority in its report.

In a paper presented at a UNEP conference in 1977, Mr. Sasamura, the former Director of the Marine Environment Divison of the IMO described what happened during the negotiations in 1973 leading to the adoption of MARPOL. Apparently, states having a large interest in protecting their coastlines attempted to extend the powers of the coastal or port states, whereas traditional maritime nations wanted to restrict that jurisdiction. A compromise was struck which was described as having three elements:

1) a flag state provision [flag states must establish sanctions under their law with respect to any violation of the Convention wherever it occurs];

2) a port state provision [States are empowered to inspect ships while in their ports and report suspected violations to the flag state]; and

3) a provision that any violation of the Convention within the jurisdiction of a coastal state is punishable either under the law of that coastal state or the flag state.

There was a divergence of opinion at the 1973 conference on the interpretation of the term "within the jurisdiction of a coastal state," i.e., whether powers of a coastal state could be exercised only within the state's territorial sea or if they could be extended beyond the territorial sea in line with the provisions being considered in the LOS negotiations that were taking place at the time. It was finally agreed to define jurisdiction "in light of international law in force at the time of application or interpretation" of the Convention (Article 9 (3)) and to reference coastal state jurisdiction without prejudice to what might be decided at a later conference.

Since that time, some legal experts have expressed the view that, under MARPOL, coastal states may extend jurisdiction in accordance with the LOS Convention.2 Since the LOS Convention is generally accepted as customary international law, few states could argue tht such jurisdiction is inappropriate. Indeed, U.S. enforcement authority in the EEZ predicated upon the LOS Convention is provided for in Presidential Proclamation No. 5030 of March 10, 1983, which established the U.S. EEZ. Proclamation 5030 states that the U.S. has jurisdiction with regard to "protection and preservation of the marine environment" within the EEZ. This assertion is consistent with statutes that have extended U.S. jurisdiction beyond territorial waters (e.g., Marine Protection Research and Sanctuaries Act, 33 U.S.C. Sec. 1411 et seq; Outer Continental Shelf Lands Act Amendments of 1978, 43 U.S.C. Sec. 1814; and Magnuson Fishing Conservation and Management Act (16 U.S.C. 1801 et seq., [the "Magnuson Act"]). Therefore, a strong legal basis exists for U.S. authority to enforce MARPOL against violations by foreign flag ships within the EEZ, under both domestic and international law.

Further, the exercise of coastal state jurisdiction within the EEZ is an appropriate policy choice because of the ineffectiveness of flag and port state jurisdiction. It has been noted that "[h]istorically flag state enforcement has proved notoriously ineffective ..."3 Recognition of this fact lead to the "tripartite flag, coastal and port state enforcement regime embodied in the LOS Convention."4 It has also been suggested that, in most cases, the U.S. does not exercise port state jurisdiction over foreign flags for pollution violations occurring in the territorial sea, contiguous zone and EEZ, but rather reports the incident to the flag state for enforcement.5 Generally, flag states report back that no violations have occurred.6 In addition, the U.S. currently exercises no coastal state jurisdiction for infractions by foreign flag vessels transiting the territorial sea or contiguous zone.7

An important distinction must be made between compliance with a prohibition and the effectiveness of an enforcement mechanism. The Coast Guard has suggested in past testimony that compliance with Annex I has been close to 98%. But such compliance bears no relationship to the effectiveness of an enforcement mechanism once a violation is suspected or occurs. The effectiveness of an enforcement mechanism relates to the ability of enforcement authorities to respond to a violation and ascribe the appropriate penalty.

One advantage to embracing coastal state jurisdiction at this time is that we can establish regulations that could serve as prototypes for eventual adoption by the international community.

On the other hand, failure to enforce Annex V's plastics prohibition as to foreign flag state vessels outside territorial waters but within the EEZ, would be highly discriminatory. U.S. flag vessels would be restricted within that area, while foreign flag vessels could pollute with impunity outside the territorial waters.

Based on the foregoing analysis, international and domestic law, as well as sound public policy, the Network supports U.S. authority to enforce MARPOL against violations by foreign flag ships within the U.S. EEZ. The proposed implementing legislation in S. 633 does not address this enforcement issue head-on, it merely provides the prohibition -- it does not mandate coastal state enforcement, but leaves open that possibility. As such, it provides the flexibility we need to adapt to evolving international law on this issue. The Committee's report could briefly refer to the factors just discussed which support enforcement against flag vessels in the EEZ.

Although we do believe the U.S. has authority to exercise coastal state jurisdiction within the EEZ, we do not support the approach set forth in this regard in S. 560 (as well as S. 1562). Following the Administration' lead, these bills would apply coastal state enforcement jurisdiction, i.e., in the EEZ, discriminately to vessels of non-parties to MARPOL but not to MARPOL party vessels. If such jurisdiction is to be applied as customary international law (which is the justification relied upon for exercising this authority), we believe it should be applied equally to all foreign flag vessels. If the U.S. is to maintain integrity in the eyes of the international community, coastal state enforcement jurisdiction should not be included in domestic legislation unless it is applied equally to all foreign flag ships. We therefore support the language of S. 633, absent amendments to S. 560 and S. 1562 to apply coastal state enforcement jurisdiction to all foreign flag vessels.

Compliance of Public Vessels

Under Article 3 of MARPOL, public vessels are exempt from MARPOL requirements, although "each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operaterd by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention." The bills under consideration today echo this minimal requirement. We believe, however, that all public vessels can and should comply with the requirements of Annex V and we therefore recommend a more stringent provision to require full compliance. Such compliance may be more readily achieved on new vessels which have taken such requirements into account in construction and design. However, changes in equipment or ship-board practices should allow existing vessels to substantially comply with these provisions. There may be some allowable exception for warships operating during times of war, when compliance with such requirements might jeopardize national security.

Because of the large population on most naval vessels, such vessels generate large quantities of garbage. This factor, coupled with the fact that naval vessels often spend long periods of time at sea, and have limited storage space, suggests that there may not be adequate storage facilities on board ships to retain garbage for off-loading at port. We understand that the Navy is investigating the use of compactors to deal with their special problem. Given that the Navy currently relies upon mobile logistic support force vessels to restock supplies as they are depleted, we believe it should be possible to use these same support vessels for off-loading of garbage. We have raised this possibility in previous testimony, but the Navy has not responded.

Application to Inland Waters

S. 633 would apply the plastics prohibition of Annex V to our inland waters. We fully support this provision. The health and well being of the inhabitants of our inland waters and shores deserve no less protection than our marine and coastal wildlife. There is no logical justification for exempting these areas from the requirements of Annex V.

We note that the River and Harbor Act of 1899 (33 U.S.C. Sec 407 et seq.) prohibits the discharge of refuse of any kind into the "navigable waters" of the United States. Although the original intent of that Act was to ensure safety of navigation, (See, e.g., U.S. v. Pennsylvania Indus. Chemical Corp., 411 U.S. 655 (1973); and U.S. v. Consolidation Coal Co., 354 F. Supp. 173 (D.C.W.Va. 1973)). Nevertheless, certain exceptions to that prohibition on discharge of refuse is made for "operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work." (33 U.S.C. 407). In addition, under certain circumstances, the Secretary of the Army is authorized to issue permits to allow discharge of refuse. (33 U.S.C. 407) Although application of the MARPOL plastics prohibition to inland waters would thus extend beyond the scope of the Rivers and Harbors Act of 1899, given basic differences in overall intent, such extension is warranted.

Executive Order No. 11574, 33 Fed. Reg. 19627, December 23, 1970 requires such permits to be issued only if they comply with the requirements of the Federal Waters Pollution Control Act, 33 U.S.C. 1151 et seq. In addition, the Secretary of the Army is required to consult with the Secretary of the Interior, the Secretary of Commerce, the Environmental Protection Agency (EPA) Administrator and the head of the agency exercising administration over wildlife resource of any affected state "regarding effects on fish and wildlife which are not reflected in water quality considerations." However, any consultation is limited to those instances "where the discharge for which a permit is sought impounds, diverts, deepens the channel, or otherwise controls or similarly modifies the stream or body of water into which the discharge is made."

In the interest of clarity, and to prevent misunderstanding on the part of permit-holders, we recommend that the River and Harbor Act of 1899 be amended to provide that no permits be issued under that Act that would contravene provisions of domestic legislation implementing Annex V.

Reception Facilities

Under Annex V, state parties are required to ensure the availability of adequate reception facilities. In the United States, this has not been interpreted to mean that the government itself must provide reception facilities. Instead, market forces have been relied upon to fill the need. This approach has appeared to work in the United States with respect to Annex I. However, Annex II has only recently come into force, so it is hard to assess the success there.

The APPS currently provides for the development of regulations that set out criteria for reception facilities, and allow ports and terminals to apply for a certificate of adequacy for such facilities. We believe that in the first instance, this is a good approach. If it appears at a later date that the demands for reception facilities of this kind have not been met by the open market, then it will be appropriate to consider requiring government involvement in providing this service.

We therefore recommend that a provision be made for establishing criteria for adequate reception facilities. Suggested language might track the language of 33 U.S.C. Section 1905 with regard to port reception facilities for oil or noxious liquid substances, as follows:

SEC. ____. RECEPTION FACILITIES

(a) The Secretary, after consultation with the Administrator of the the Environmental Protection Agency and the Secretary of Agriculture, shall establish regulations setting criteria for determining the adequacy of reception facilities of a port or terminal and shall establish procedures whereby a person in charge of a port or terminal may request the Secretary to certify that the port's or terminal's facilities for receiving garbage from seagoing ships are adequate.

(b) In determining the adequacy of reception facilities required by the MARPOL Protocol at a port or terminal, the Secretary may consider, among other things, the number and types of seagoing ships using the port or terminal.

(c) If upon inspection, reception facilities of a port or terminal are adequate to meet the requirements of the MARPOL Protocol and the regulations established hereunder, the Secretary shall, after consultation with the Administrator of the Environmental Protection Agency, issue a certificate to that effect to the applicant. A certificate issued under this subsection:

(1) is valid until suspended or revoked by the Secretary for cause or because of changed conditions; and

(2) shall be available for inspection upon the request of the master, or other person in charge, or agent of a seagoing ship using or intending to use the port or terminal.

The suspension or revocation of a certificate issued under this subsection may be appealed to the Secretary and acted on by him in the manner prescribed by regulation.

(d) The Secretary shall periodically cause to be published in the *Federal Register* a list of the ports or terminals holding a valid certificate issued under this section.

(e) Except in the case of force majeure, the Secretary shall deny entry to a seagoing ship requiring the use of reception facilities for garbage retained onboard, if --

(1) the port or terminal is one required by the MARPOL Protocol or regulations hereunder to have adequate reception

facilities; and

(2) the port or terminal does not hold a valid certificate issued by the Secretary under this section.

(f) The Secretary is authorized to conduct surveys of existing reception facilities in the United States to determine measures needed to comply with the MARPOL Protocol.

Vessel Waste Management Plan

We recommend that compliance with Annex V be accomplished, in part, by requiring commercial ships to develop and implement individual "Waste Management Plans" to be approved by the Coast Guard. Each plan would set out that ship's strategy for compliance with Annex V. Each strategy will differ depending on size of the vessel, the nature of its cargo, crew size, equipment (e.g., incinerator, compactor) and trade route. Such a plan will ensure careful consideration of available options for compliance with Annex V and, in conjunction with record book and presentation requirements (discussed below), will facilitate effective enforcement.

Garbage Record Book

We recommend that compliance with Annex V be demonstrated by requiring commercial ships to keep a log book of their Annex V waste disposal practices. Under Regulation 20 of Annex I, ships are required to keep an oil record book as part of the ships's official log book or separately, to record, among other things, loading and unloading of oil cargo, ballasting and cleaning of cargo tanks, and discharge of ballast and bilge water. Each operation to be recorded must be signed in the log book by the officer in charge of that activity and countersigned by the Master of the ship. In practice, this responsibility is taken quite seriously. The oil record book is required to be readily available for inspection and copying by the government representative of a MARPOL contracting party.

A similar "Garbage Record Book" could be required for Annex V. With regard to plastic, an entry in the log could indicate that the waste was off-loaded at a particular port, or incinerated on board the ship. Compliance with other requirements of Annex V could also be recorded. For example, since Annex V allows the discharge of certain garbage beyond 25 miles of the shoreline, the date, time, location and approximate amount of garbage discharged could be easily entered in a log book. A requirement for ships to carry and utilize such a log book would not create an undue economic burden. Indeed, it may not be necessary to create a separate log for this purpose. As with Annex I, such entries might be incorporated in an existing log.

Presentation

It has been suggested that shoreside presentation of garbage be a requirement of entry into U.S. ports by commercial vessels that are not equipped with incinerators. The Network supports a presentation requirement, if such requirement is carried out in conjunction with consideration of an individual ship's solid waste disposal plan and compliance with that plan through appropriate entries in the ship's waste disposal log. For example, presentation of waste may be waived if a ship is equipped with a solid waste incinerator and evidence is presented (by a log entry) that the incinerator has been used in accordance with the ship's plan. Ships that are not equipped with incinerators may, under some circumstances, warrant a waiver from presentation. For example, if the ship has recently off-loaded waste at another port and has ample storage space to retain waste to be off-loaded at a subsequent port, it may not be necessary to require off-loading of waste at the current port of call. Such a waiver should, however, be issued only where evidence of compliance with the ship's waste disposal plan is provided (e.g., through an appropriate log entry).

Regulations implementing a presentation requirement, as well as requirements for solid waste disposal plans and logs, should be designed to prevent undue discrimination against U.S. flag vessels. While it will be difficult for the U.S. government to require foreign flag ships to carry an approved waste disposal plan, it would be possible to require entries in the foreign ship's log of the ship's most recent disposal activity prior to entering a U.S. port, and all disposal activities while present in the U.S. EEZ.

Since enforcement authorities of the Department of Agriculture and the Coast Guard are already present at ports, a new administrative bureaucracy would not be required to implement requirements for a garbage record book or presentation.

Floating Materials

Annex V allows floating dunnage and floating non-plastic packing and lining materials to be discharged beyond 25-miles from shore. Because a majority of this cargo-associated waste is generated during loading and unloading we strongly believe such waste should be required to be off-loaded at appropriate reception facilities before departure, rather than be permitted to be carried offshore for discharge into the sea. The limited amount of such waste that is generated at sea could be stored along with any plastic waste for onshore disposal or managed similarly to plastic waste. Such a practice could easily be instituted without undue burden on shippers. Floatables represent a special problem in that they are more likely to be carried ashore than other waste that sinks. As such, they make a special contribution to destruction of coastal amenities. The benefits to coastal communities are far outweighed by the minor burden of properly disposing of such materials.

Use of Ship-Board Incinerators

The high cost of ship-board incinerators, coupled with their size and labor-intensive nature have greatly limited their use to large merchant ships. Although incineration of ship-board garbage may be one alternative to dumping waste into the sea, it poses a different set of environmental concerns. The EPA has recently determined that land-based municipal waste incinerators "may reasonably be anticipated to endanger public health or welfare..." and has announced its intent to regulate certain pollutants from municipal waste incinerator emissions under the Clean Air Act.8 Municipal solid waste incinerators typically release heavy metals, dioxins and acid emissions. Metals and dioxins may be released in air emissions or fly ash. The amount of dioxins released will depend in large part on the combustion efficiency necessary to destroy dioxins. Measures must be taken to ensure the safety of the marine environment by reducing post combustion formation of dioxins and using the proper disposal techniques of residues remaining from the burning process.9

Most marine garbage incinerators are less preferable from an environmental perspective than their land-based counterparts because ocean-based models are not required to be equipped with air pollution control devices to comply with Clean Air Act emission standards. Emissions from ocean-based solid waste incinerators are currently unregulated. The Network strongly recommends in light of potential greater reliance by the shipping industry on the use of ship-board incinerators for garbage disposal, that such incinerators be regulated to ensure environmental protection. Specifically, ocean-based incinerators should be required to achieve the same emission standards as land-based incinerators. In addition, stringent regulations should be promulgated to restrict disposal of hazardous materials in such incinerators and to require land-based testing and proper disposal of ash residues arising from their use. Residues and ash from solid waste incinerators that contain dioxins and heavy metals are toxic and may require disposal in licensed hazardous waste incinerators. The EPA is just beginning to devlop standards for municipal incinerators on land. We recommend that the EPA also be authorized to regulate similar ship-board incinerators and be directed to develop appropriate standards for their control.

Demonstration Projects

The enforcement and implementation provisions listed above can be achieved in the short term. More substantial efforts require longer start-up time and more careful planning. To facilitate the development of such efforts we recommend that the proposed legislation include a provision for the development and conduct of demonstration projects. Federal funding could be provided as an incentive for the shipping industry, the plastics industry, national, state and local governments, and environmental and citizen groups to engage in cooperative efforts to find solutions to the problem of marine debris from ships.

Examples of such projects might be: (1) a waste recycling project that would demonstrate the feasibility of at-sea separation of waste (e.g., glass, plastic, metal) for receipt at specially designed port facilities for recycling;10 (2) a degradable plastics project to demonstrate the feasibility of using photodegradable plastic (Ecolyte - Attachment C) and biodegradable PHBV plastic (Attachment D) as packaging for ships stores; (3) a renewable resource project to demonstrate the feasibility of using products packaged in paper, fiber or related products for ships stores; (4) a project to demonstrate the feasibility of minimizing the generation of ship-board garbage (particularly non-degradables) through recycled packaging, use of degradables or bulk packaging; (5) a project to demonstrate port loading and unloading practices to minimize the loss of dunnage and cargo residue; (6) a project to develop new ship construction design to facilitate compliance with Annex V; (7) a project to develop new ship-board incinerator design or other innovative thermal destruction technology to eliminate toxic emissions; and (8) creation of an adequate reception facility for small, high-volume ports such as Unalaska, AK ("Dutch Harbor").

At the very least, studies to assess these complementary solutions to the problem should be required.

Penalties

We recommend that strong penalty provisions be provided for violations of Annex V, including criminal penalties, as are currently provided for violations of Annexes I and II of MARPOL.

In addition, we suggest that the amount of the civil penalty provided be set at a minimum penalty of $25,000 for each violation. The establishment of a minimum penalty suggests the importance of compliance with the stated prohibitions and is appropriate if coupled with Secretarial discretion to compromise, modify or remit penalties. Such discretion allows the Secretary to alter the penalty where appropriate (*e.g.*, recreational boaters for whom a $25,000 penalty might be inappropriate).

Data on penalties imposed by the U.S. government for infringements of Annex I in 1985 11 suggest tht a minimum penalty may be necessary to ensure that penalties are sufficiently high so as not to be considered an acceptable cost of doing business. The penalties imposed during that time ranged from $500 to $2,000. Without more specific information on the nature of the violations it is difficult to assess the reasonableness of these penalties. Nevertheless, a substantial minimum penalty would contribute greatly to the seriousness with which these obligations are viewed.

In addition, we recommend that domestic legislation specifically hold ship owners and captains responsible for civil penalties imposed for violations of Annex V committed in relation to operation of their vessel.

Citizen Suits

We strongly recommend the inclusion of a citizen suit provision in implementing legislation similar to that provided in S. 633, but also including injunctive relief. Provisions for suits by persons under S. 560 and S. 1562 are inappropriately limited to persons "suffering loss or damage." Citizens should be authorized to bring an action against any person alleged to be in violation of the prohibition regardless of any personal loss or damage the individual bringing suit has suffered.

Amendment to MPRSA

The Network strongly objects to the provisions set forth in S. 560 and S. 1562 that would amend the Marine Protection Research and Sanctuaries Act (Ocean Dumping Act), which would define dumping under that Act as excluding "a discharge or disposal subject to regulation by the Act to Prevent Pollution From Ships." The Ocean Dumping Act is governed by the London Dumping Convention (LDC) which specifically prohibits dumping of plastics at sea (26 U.S.T. 2403, TIAS 8165 (1972), Article 4 (1)(a)). Dumping is defined under the LDC to exclude discharges "incidental to the normal operation of a vessel." This exclusion is reflected in the Ocean Dumping Act as "... a routine discharge of effluent incidental to the propulsion of, or operation of motor-driven equipment on vessels..." In our view, this narrow statutory language accurately reflects the intent of the framers of the Act, which leaves open the door for regulation of plastic debris under the London Dumping Convention. Moreover, at the last meeting of the LDC the issue of plastic debris in the ocean was discussed and a desire to better address that issue under the London Dumping Convention was expressed by the parties to that Convention. At no time have the parties relinquished jurisdiction over dumping of ship-generated garbage.

We therefore believe it is inapproprite for U.S. legislation to expand the scope of the "incidental discharge" exemption more widely than is evident in the Act. Indeed, it is in the best interests of the U.S. to leave open the possibility of another legal mechanism for addressing the problem of dumping of plastic regardless of its source.

We recognize a desire to prevent overlapping jurisdiction over this issue within our domestic laws. To this end, we support Section 102(b)(5) of S. 633, which provides that the plastic prohibition not apply to "disposal specifically allowed pursuant to a valid permit under the Marine Protection Research and Sanctuaries Act or Clean Water Act." Such a provision ensures that a particular dumping activity will not conflict with provisions of Annex V.

Plastic Driftnets

Although language dealing with the problem of plastic drift gillnets is not addressed in any of the three bills being discussed today (the issue previously presented in hearings on S. 62), the Network strongly feels that this issue needs serious consideration by this Subcommittee, and therefore merits discussion here. We concur with language presented in S. 62, Section 4(c) (1), which calls for prompt initiation of negotiations with each foreign government that conducts, or authorizes it nationals to conduct, driftnet fishing operations in the taking of marine resources of the U.S. These negotiations would enable further monitoring and assessment of driftnet fishing on marine resources, as well as require agreements on methods to reduce incidental take. However, we also feel the need for inclusion of a provision to enforce compliance by foreign nations. S. 62 provides the United States with the option to cut foreign fishing allocations (Total Allowable Level of Foreign Fishing [TALFF] in U.S. waters as provided for in the Magnuson Act to those nations which evade participation in monitoring efforts. Such action is necessary in light of the critical need for monitoring of driftnet fisheries.

Further, the Network recommends that this Subcommittee consider a provision to negotiate for greater observer coverage of all the North Pacific pelagic driftnet fisheries (squid, billfish, albacore, and salmon). Such an observer program was considered, in part, at the 95% confidence level in S. 62, and is necessary for the collection of adequate data to accurately assess the impacts of these fisheries on living marine resources. In particular, the current 6 percent observer coverage of the salmon mothership driftnet fishery in the U.S. EEZ is inadequate. Under the Magnuson Act, 100 percent observer coverage is provided for all other fisheries in the U.S. EEZ. The salmon driftnet fishery should be no exception. At minimum, we suggest that more effective enforcement of permit regulations could be achieved if the number of observers on catcherboats be set to assure a 95 percent confidence level with a variation of plus or minus four percent. This would require an increase to 24 percent coverage. This minimal increase in coverage would provide more random samples and greater data reliability, and could curtail Japanese efforts to manipulate the observer program. Higher coverage would also provide more information on entanglement of Dall's porpoises and other marine mammals, which could assist efforts to reduce kill rates.

To better guide negotiations, the Network also recommends consideration of four additional sttements of purpose. These statements are:

(1) to promote the safe human release of entangled animals;

(2) to facilitate the development of technology to prevent the loss of driftnets, and to increase the likelihood tht ghost nets will either be recovered or decompose;

(3) to require nations party to the negotiations [as previously discussed] to establish research programs; and

(4) to establish educational programs in this nation and in the other party nations to demonstrate to driftnet fishermen the benefits to the marine environment and themselves of such location and retrieval technology.

Section 8(a) of S. 62 contains language calling for an evaluation of the feasibility of and development of recommendations for the marking, registration, and identification of driftnets for the purpose of determining the origin of lost, discarded or abandoned driftnets. The Network believes there now exists a definite immediate need for net marking, registration, and identification. The loss of living marine resources in both active driftnet fishing operations and ghost net residues has been well documented, and estimated losses are far greater. We strongly feel that either S. 62, S. 559, or S. 633 should be amended to require by 1990 the development and deployment of a system for net marking and registration, and should also require net inventories with fines charged for unaccounted for net losses. We also feel this marking system should be extended to trawl and seine nets, the former type heavily implicated in the loss of 30,000- 50,000 northern fur seals each year (the population currently declining at 6% per year).

Uses of Degradables

The Network concurs with the premise discussed in S. 633, 107(b)(4) that a study be made of the feasibility of substituting non-plastic materials for other plastic products that have been associated with adverse impacts on marine fish and wildlife. We thus recommend that, at minimum, an assessment be required of alternative materials for six-pack yokes, strapping bands, sheeting, plastic bags, and other products which bio- and/or photodegrade rapidly when released in the freshwater and marine ecosystems. This might be accomplished through the demonstration projects proposed above.

Land-Based Sources of Plastic Pollution

The Network believes that the discharge of land-based plastics into the marine ecosystem is excessive. Some of these discharges may be from landfills, but most occur via releases to surface waters, through sewage treatment works, or as a consequence of bypassing these works. The EPA should be required to prepare a report on this matter, with a view toward legislation to address the special nature of this problem. In this regard, we recommend the addition of a new subsection (c) (with subsequent re-lettering) to Title I, Section 101, of S. 559, as follows:

(c) LAND-BASED SOURCES OF PLASTIC POLLUTION. -- The Administrator, in consultation with the Secretary, shall conduct a study of the means whereby plastic reaches the marine environ-

ment indirectly from the territory of the United States, including an analysis of such possible sources as the improper design or operation of publicly owned treatment works, the bypassing of such treatment works, and releases to surface waters from industrial wastewater treatment facilities, storm drains, landfills, and nonpoint sources. The study shall contain recommendations, which may include additional legislation, the redesign of treatment works, screens or other devices to prevent floating materials from reaching surface waters through storm drains, stricter enforcement, and such other measures as the Administrator beleives desirable and feasible.

We note that House Bil H.R. 940, as currently revised, provides for a similar study.

Authorization

Of the three bills discussed today, only S. 633 calls for authorization of appropriations "... necessary to carry out the provision of this Act." Due to the magnitude, degree, and extent of the plastic debris problem, and the need for strong and effective enforcement measures, the Network recommends an authorized appropriation level of $5 million per year and an extension through FY 1990.

The effectiveness of the legislation will be directly dependent upon the strength of implementing and enforcement mechanisms. A substantial amount of this appropriation should be earmarked specifically for enforcement efforts by the Coast Guard, National Marine Fisheries Service, and the Department of Agriculture, as appropriate.

Conclusion

It is clear that a major cooperative effort will be needed if we are to successfully cope with the problem of plastics and marine debris in the world's oceans. Although effective implementation and enforcement of protective measures will undoubtedly be difficult, the barriers to success are not insurmountable.

The United States has played a leading role in encouraging strong international regulation of vessel-source pollution. The Network is hopeful tht U.S. efforts to address the problem of plastic pollution in the marine environment will continue to reflect this leadership role.

Through international cooperation, strong domestic initiatives, public education and continued scientific efforts to better understand the problem, our collective responsibility to protect our precious ocean and coastal resources can be met.

In closing, the members of the Entanglement Network Coalition appreciate consideration of this important issue by the

Subcommittee on Environmental Protection. We look forward to assisting you and other Members in both the House and Senate in bringing into effect -- as expeditiously as possible -- both environmentally sound domestic legislation and U.S. ratification of Annex V.

FOOTNOTES

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1. For example, under the Port and Tanker Safety Act of 1978, 33 U.S.C. Sec. 1221 *et seq.* (PTSA), all vessels in the 20,000 - 40,000 dwt category that are fifteen years or older after January 1, 1986 are required to be equipped with segregated ballast tanks or clean oil washing systems. These requirements go beyond internationally agreed upon systems. The PTSA further states that "[t]he Secretary ... may issue regulations that exceed standards agreed upon internationally." (Sec. 5(6) (A)).

2. It is important to note that under the LOS Convention the right of a coastal state to act with respect to violations occurring in the EEZ is restricted. Under paragraph 3 of Article 220, it is limited to the right to demand information of a vessel navigating in the territorial sea or EEZ, when there are clear grounds for believing that while in the EEZ, the vessel has committed a violation of international rules or stndards or of national rules conforming and giving effect to international standards. If a vessel refuses to supply requested information or provides information "manifestly at variance with the evident factual situation," or if the violation has resulted in a "substantial discharge" causing or threatening "significant pollution," paragraphs 5 and 6 of Article 220 authorize coastal states to physically inspect the vessel. The coastal state may arrest the vessel and take proceedings against it if the state has clear objective evidence that the violation resulted in a discharge causing or threatening major damage to the coastline or related interests or to resources of the territorial sea or EEZ. The vessel must be permitted to proceed, under paragraph 7, if reqirements for bonding or other financial security have been satisfied. Protection against abuse of coastal state enforcement jurisdiction is provided by the qualification that the violation involve the occurence or threat of significant pollution or major damage.

3. Bernhardt, J. Peter A., "Effective Enforcement in the EEZ Over Flags," paper presented at the Tenth Annual Seminar Sponsored by the Center for Oceans Law and Policy, University of Virginia, Southampton, Bermuda, March 12-15, 1986, p. 8.

4. *Id.*

5. *Id.*

6. *Id.*

7. The United States does, however, under the Intervention Convention and Intervention on the High Seas Act, take action beyond the territorial sea to prevent a maritime casualty, including pollution or threat of pollution resulting from the casualty. Such intervention reaches farther than enforcement measures under the customary law of the LOS Convention.

8. "Assessment of Municipal Waste Combustor Emmisions under the Clean Air Act," 52 Fed. Reg., July 7, 1987, 25407.

9. See, Environmental Defense Fund/Environmental Information Exchange Fact Sheets entitled, "Introduction to Incineration," "Municipal Incinerators," "Incinerators and Metals," and "Ash from Municipal Solid Waste Incinerators," EDF, 1616 P Street, N.W., Washington, D.C. 20036.

10. The March 1987 issue of Modern Plastics suggests a great potential for waste heat recovery from recycling of plastics.

11. United States Coast Guard, "Summary Report By the United States to IMO of Alleged Violations of the Discharge Provisions of MARPOL 73/78 Referred to Flag States," MEPC 24/14/4, December 22, 1986.

BFI
BROWNING-FERRIS INDUSTRIES

STATEMENT

of

BROWNING-FERRIS INDUSTRIES

by

James R. Greco
Divisional Vice President
Government and Industry Affairs

on

Plastic Pollution and Annex V of the MARPOL Treaty

to the

United States Senate
Committee on Environment and Public Works
Subcommittee on Environmental Protection

in

Washington, D.C.

on

September 17, 1987

1150 CONNECTICUT AVENUE N.W. • WASHINGTON, D.C. 20036

Statement of James R. Greco, Browning-Ferris Industries

Introduction

Browning-Ferris Industries is one of the nation's leading companies engaged in the collection, transfer, treatment, and disposal of solid and hazardous wastes. BFI operates throughout the country and therefore has a rare perspective on all of the different manifestations of waste-related problems.

Annex V of the MARPOL Treaty and its implementing legislation present an intriguing waste-related issue. To a company in the waste services business, it is reminiscent of some of the very basic environmental issues tackled by Congress in the late 1960's and early 1970's. Regarding solid waste disposal, for example, Congress sought to outlaw open, burning dumps back then. Now Congress addresses solid waste disposal by seeking to regulate contaminants that may leach into groundwater in parts per billion.

Relative to the dumping of garbage at sea, Annex V of MARPOL is at the open, burning dump stage. Even for many of us in the waste services industry, it comes as a surprise that ships by and large are not prohibited from dumping their garbage at sea. We believe that such a practice is inexcusable given the modern methods for disposing of waste easily and safely. We heartily applaud these subcommittees' efforts to clamp down on the dumping of waste at sea once and for all.

We at BFI, and undoubtedly others in the waste services industry, stand ready, willing, and able to handle solid waste generated at sea. Moreover, as corporate citizens of Texas, we are painfully aware of the toll that dumping of waste at sea takes on our beaches. We strongly support the MARPOL Annex V implementing legislation for these reasons, and believe that the role of government in assuring the existence of waste reception facilities need not be significant.

Adequacy of U.S. Port Waste Reception Facilities

BFI provides solid waste management services in well over 200 congressional districts in 42 states. Indeed, we operate in many foreign countries that themselves are or may become signatories to Annex V of MARPOL. Our domestic operations include practically all of the coastal states. Major coastal urban areas serviced by BFI include:

Boston, Massachusetts
Newark, New Jersey
Baltimore, Maryland
Norfolk, Virginia
Charleston, South Carolina
Jacksonville, Florida
Ft. Lauderdale-Miami, Florida
Mobile, Alabama
Biloxi, Mississippi
New Orleans, Louisiana
Houston-Galveston, Texas
Corpus Christi, Texas
Brownsville, Texas
Los Angeles, California
San Mateo, California

By serving so many areas with major ports, and indeed with major international airports as well, BFI already handles a sizeable volume of waste that is very much like the waste that would be subject to Annex V of MARPOL. From this experience, we believe that reception facilities at U.S. ports can easily be adapted to handle the increased volume of garbage that will be brought to port once Annex V takes affect.

Private waste services companies, like BFI, handle over 90% of the nation's commercial and industrial waste and an increasing percentage of the nation's residential waste. Because the nature of the waste that will be brought to port subject to Annex V is very much like the residential and commercial waste that BFI handles on an everyday basis, there do not appear to be problems so unique to shipboard waste to raise doubts about the private sector's ability to handle it.

From our observations, it appears that the quantity and quality of waste generated aboard ship is very much like that generated on land. Obviously, the number of individuals aboard ship at any one time and the length of their time at sea is data outside the scope of our knowledge. We can say, however, given what we know about the number of crew and passengers who move through our nation's ports, that if each person at sea generates roughly four-five pounds of waste per day (the rough average generated on land), the volume of waste that will be presented at ports can be handled by state-of-the-art reception facilities.

Once Annex V is implemented, the required "waste reception facility" would be determined by the type of waste brought into port and by the applicable regulation. For example, wastes which are neither hazardous wastes nor regulated by the Department of Agriculture could be off-loaded from a ship using vehicles, cranes, and other equipment that already exists for such purposes. The waste would subsequently be put into containers suitable to the nature of the solid waste -- similar to the containers you might see behind shopping centers and apartment complexes in your neighborhood -- and then loaded into trucks. These trucks would then transport the wastes to a state-approved disposal site.

Wastes currently regulated by the Department of Agriculture are required to be steam-sterilized or incinerated. Such treatment facilities could exist either on ship, within the port facility, or within an appropriate distance from the port. The residue from these treatment facilities, of course, must ultimately be landfilled.

This subcommittee may be unaware that the very treatment methods (incineration or steam sterilization) required by the Department of Agriculture for certain solid wastes are now being required by many state and local governments for medical wastes, of the nature generated by hospitals, medical clinics, nursing homes, and laboratories. This is of consequence to deliberations on implementing Annex V of MARPOL because the trend is now toward an increased number of treatment facilities in urban areas, even in the absence of Annex V.

Methods for handling waste aboard ship are not particularly complicated. Many large ships could house compaction equipment, which reduces the volume of waste and is largely odor free. Compaction equipment would also largely reduce the problem of such large quantities of waste having to be stored on ship as to interfere with the ship's operations. Beyond on-board compaction, however, we are certainly aware that ships now engage in on-board incineration. Steam sterilization aboard ship does not appear to be a sensible alternative because volume is not significantly reduced, though there is certainly no reason to rule it out.

Because of the confluence of Annex V of MARPOL and state requirements for specialized treatment of medical waste, therefore, the existence of reception facilities is probably not the problem it might have been a decade ago.

Cost Considerations Associated With Waste Presentation Requirement

The costs of disposing of waste generated aboard ship can be broken down as follows: (1) shipboard containerization and handling; (2) transferring shipboard waste to the dock; (3) transferring waste from dock to incineration or steam sterilization unit; (4) cost of incineration or steam sterilization process (which could have previously occurred aboard ship); (5) cost of transporting residue from treatment unit to ultimate disposal facility; (6) disposal cost at landfill or waste-to-energy facility.

To obtain information about the costs that might be associated with disposing of shipboard wastes, we conducted a small survey of BFI operating units in Boston, Massachusetts; Norfolk, Virginia; Jacksonville, Florida; New Orleans, Louisiana; Houston, Texas; and Los Angeles, California. Based on assumptions that we believe are generally accepted in the waste services industry, we calculate that a vessel with a 50-person crew on a 10-day voyage might generate approximately 2000 pounds of solid waste, for which the ship might incur additional costs of roughly from $30-75 to dispose of its waste on land. This range represents the cost for servicing an eight cubic yard container of waste that has already been off-loaded. The cost varies due to different local operating costs, the degree of waste compaction, distance to the landfill, and variations in landfill fees. This cost range does not include any costs associated with incineration or steam sterilization or the transfer of the waste from ship to dock. Incinerating or steam sterilizing waste may cost from $.25 to $.50 per pound of waste (typically inclusive of disposal charges). This would add to the ultimate charge to ships for presenting waste, but probably not dramatically.

Augmenting Existing Waste Reception Facilities

We believe that it will be unnecessary for the government to render financial assistance to assure the provision of adequate waste reception facilities at port. This assumes that reception facilities, though not always located within the actual confines of the port, would be reasonably accessible in nearby urban areas.

There will clearly be some small ports at which the ship traffic is simply insufficient to support a private investment in a waste reception facility. We do not believe that the reluctance of the private sector to provide such facilities at small ports should detract from passage of MARPOL Annex V implementing legislation. It is certainly within the capacity of the waste industry and the governmental authorities near such ports to come up with systems that adequately dispose of ship-generated wastes without the investment of significant governmental resources.

One indispensable component of providing private reception facilities, however, is the assurance that there will be adequate enforcement of the MARPOL Annex V implementing legislation and regulations. Without strong enforcement, the volume of waste upon which the provision of private reception facilities would be predicated could well not materialize. Here again, we are confident that enforcement is not an insurmountable hurdle in the overall context of MARPOL.

Conclusion

Implementing Annex V of the MARPOL Treaty will be a remarkable step forward toward the goal of keeping our shores clean. It will be a privilege for us in the waste industry to play a role towards such a worthy goal. The capability exists within the private sector to address the problem of receiving shipboard wastes, our best estimates indicate that the price for performing such a service will be minimal in the overall context of operating a ship, and we believe that the role of government in assuring that reception facilities are provided will be quite limited at most.

We recognize that there is still a great deal more information that Congress may need before it legislates in this area. We would be pleased to work with this subcommittee in your deliberations on implementing Annex V of the MARPOL Treaty and other plastic pollution legislation.

LEAGUE OF WOMEN VOTERS OF OCEAN COUNTY, N. J.

c/o R. Hanger, President
18 Brewers Lane
Jackson, N.J. 08527
(201) 367-3488
July 7, 1987

My name is Janet N. Larson and I live in Dover Township, Ocean County, N.J. I am here as a member of the Natural Resources Committee of the League of Women Voters of Ocean County.

The League of Women Voters of Ocean County and the League of Women Voters of New Jersey support SOURCE REDUCTION as the first step in our position on a solid waste management program which encompasses plastic pollution in our ocean. The individual consumer can change his habits to reduce the use of many materials. However, packaging regulations can only be remedied by legislative action and this would be most effective at the federal level. The bad habits developed for convience have resulted in a "throw away" mentality that needs to be changed. We should stop the use of disposable lighters, disposable razors and other such products. We should encourage diaper service instead of disposable diapers. We should encourage paper packaging as being preferable to styrofoam or plastic. The fast food industry is especially quilty in this regard. Manufacturers should be encouraged to produce appliances which can be repaired instead of discarded. The growing use of balloons, so much in evidence this past weekend, add to plastic waste. Many of these end up in the ocean and are detrimental in a number of different ways.

As sighted above, in some instances products should be prohibited. In others tax incentives for the producer and consumer could encourage the use of recycables. We can not stress enough the importance of recyclability at the time of product design insured by legislation. What few regulations there are, are directed at the handling and disposal of plastic wastes, not logically controlling their introduction which in turn would reduce not only plastic pollution of the ocean but all plastic pollution of the earth.

Thank you very much for the opportunity to participate in this fact finding endeavor.

# # #

FOUNDED 1913

National Association of Stevedores

2011 EYE STREET, N.W. · SUITE 601 · WASHINGTON, D.C. 20006 · 202 296-2810

September 16, 1987

The Honorable George J. Mitchell
Chairman, Subcommittee on Environmental Protection
Committee on the Environment and Public Works
U.S. Senate
458 Senate Dirksen Office and Public Works
Washington, D.C. 20510

RE: Hearing on Legislation
to Study and Control
Disposal of Plastic
Waste and to Implement
MARPOL Annex V

Dear Chairman:

Thank you for the opportunity to comment on this legislation.

The National Association of Stevedores (NAS) is a membership trade organization representing the United States stevedore and marine terminal industry. NAS member companies employ tens of thousands of longshore labor to load and unload ships calling at this country's ports in both foreign and domestic commerce. NAS member companies do business on all of the nation's seacoasts, the states of Alaska and Hawaii, the Commonwealth of Puerto Rico, and various inland ports.

The NAS is a strong supporter of the United States' efforts to reduce pollution of the world's oceans by ships through the adoption of the International Convention for the Prevention of Pollution by Ships (MARPOL 73/78) and its subsequent Annexes. Our members agree that shoreside industries should play a part in assisting ships in the proper disposal of their wastes in a manner that neither pollutes the sea, the land or the air. We also favor efforts by ships to minimize the quantity of the garbage they generate as an important part of the solution to that problem.

There are considerable differences in operations among marine terminals and ports around the nation, and we are pleased that the legislation currently before the committee recognizes that diversity by giving to the Secretary of Transportation regulatory flexibility to address the challenge of implementing and enforcing Annex V and on a port by port basis. This flexibility will allow the U.S. Coast Guard to consider the unique circumstances at each port and enforce the implementing regulations in the most cost efficient and environmentally effective manner.

Such flexibility has precedent. When Congress passed the Act to Prevent Pollution from Ships (Public Law 96-478, 33 U.S.C. 1901 et seq.), the Coast Guard was given the responsibility for developing implementing regulations detailing the proper disposal of certain marine pollutants as required of the U.S. under MARPOL Annexes I and II. The NAS was an active participant in the development of these regulations.

We will continue to work with Congress and the appropriate Federal agencies to develop laws and regulations that will assist ships properly execute their responsibilities, and we will be pleased to provide the necessary information on the role this industry can play.

Please include this letter as a part of the subcommittee record.

Sincerely yours,

Thomas D Wilcox

Thomas D. Wilcox
Executive Director and General Counsel

cc: All subcommittee members.

Working for the Nature of Tomorrow
NATIONAL WILDLIFE FEDERATION
1412 Sixteenth Street, N.W., Washington, D.C. 20036-2266 (202) 797-6800

COMMENTS OF

THE NATIONAL WILDLIFE FEDERATION

ON

S. 633 - THE PLASTIC POLLUTION CONTROL ACT OF 1987

S. 559 - THE PLASTIC WASTE REDUCTION AND DISPOSAL ACT OF 1987

S. 560 - IMPLEMENTATION OF PROVISIONS OF ANNEX V TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS 1973 / 1978

FOR THE SENATE SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION OF THE
ENVIRONMENT AND PUBLIC WORKS COMMITTEE

Prepared by

Steven Moyer
Legislative Representative - Fisheries

John P. Ernst
Legislative Representative - Wildlife

FISHERIES AND WILDLIFE DIVISION
NATIONAL WILDLIFE FEDERATION

October 1, 1987

The National Wildlife Federation (NWF) welcomes this opportunity to present our views on S.633, S.560, and S.559, three bills which deal with the increasingly serious problem of plastic pollution. The NWF is the world's largest non-profit conservation-education organization with over 4.8 million members and supporters in 51 states and territories. Our members have a strong interest in all types of wildlife in the U.S. and the world, including marine mammals, seabirds, sea turtles and fisheries resources. We are submitting these comments for inclusion in the record for the hearing held on September 17, 1987 by the Subcommittee on Environmental Protection of the Senate Environment and Public Works Committee in regard to these three bills.

S.560 would implement Annex V of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, with annexes and protocols, 1978 (MARPOL). S.559 would ban non-degradable six-pack holders and other plastic connecting devices and would require the Environmental Protection Agency (EPA) to assess measures available to reduce environmental impacts of plastic pollution. S.633 also would implement Annex V and mandate a study by EPA to determine methods to reduce plastic pollution, and would require a public information and education program about plastic pollution. The NWF strongly supports the objectives of these three bills as well as many of their provisions because they will provide fish and wildlife resources both immediate and long term protection from the impacts of plastic pollution.

The increasing prevalence of plastic pollution in the oceans of the world is well documented in Congresional testimony, scientific research reports, and the public media. The problem promises to become even more serious unless legislative action is taken. As stated by Carmen J. Blondin, Deputy Assistant Administrator for Fisheries Resource Management, National Oceanic and Atmospheric Administration (NOAA), "The durability of most plastics, the increasing annual production of plastic resins (46 billion tons in the U.S. in 1985) and the absence of new systems for refuse management prove that plastic pollution can only be increasing." [Hearing on Plastic Pollution in the Marine Environment, before the Subcommittee on Coast Guard and Navigation, House Merchant Marine and Fisheries Committee, August 12, 1986].

IMPACT OF PLASTIC MATERIALS ON WILDLIFE

Plastic materials impact wildlife populations through two principal mechanisms: entanglement and ingestion. While the popular press and the longer-term research projects have concentrated on the problem of entanglement, wildlife mortality resulting from the ingestion of plastics may prove to be an equal or more serious problem than that of entanglement.

Several factors contribute to the potential impacts of plastic pollution to wildlife. First is the large volume of plastic materials discarded annually into the ocean, either directly or via waterways. Since the majority of this pollution degrades very slowly, if at all, the accumulation of plastic debris over time results in an increased volume of plastic materials in the marine environment. As the volume of this debris increases, the likelihood of entanglement or ingestion by marine organisms also increases.

ENTANGLEMENT

Marine animals can become entangled in plastic debris which may result in injury or mortality. While the precise impact of entanglement on population levels is not well quantified, limited information has documented a variety of entanglement problems with several wildlife species.

Because most plastic fishing gear is specifically designed to be transparent underwater, it is difficult for most animals to detect and avoid. In addition, fish and other prey species trapped in nets attract predator species of marine mammals and seabirds into the nets where they may become entangled and die. Moreover, the behavioral curiosity of several species of pinnipeds may also be a factor in attracting them to plastic debris.

Marine Mammals

The primary entanglement research to date has centered on the northern fur seal population of the Pribilof Islands. That population has been studied intermittently for the past 70 years. From these studies scientists have concluded that entanglement increases mortality on seal populations through: 1) impairment of normal motion, 2) increased drag while swimming resulting in the need for additional energy expenditure and reduced ability to pursue prey, 3) bacterial infections resulting from lacerations, and 4) immediate death from complete restriction in large nets or fully debilitating entanglements.

While the effects of entanglement on the health of the Pribilof Island seal herd are still largely unknown, current data suggest entanglement to be a significant factor in the declining status of the herd.

Birds

Relative to the limited knowledge of the effects of plastic entanglement on marine mammals, almost nothing is known about its effects on birds. According to NOAA Deputy Assistant Administrator for Fisheries Resource Management, Carmen J. Blondin, "Although the scientific and popular literature contains many records of entangled seabirds, no estimates of mortality rates have been made" [Hearing on Plastic Pollution in the Marine Environment before the Subcommittee on Coast Guard and Navigation, House Merchant Marine and Fisheries Committee, August 12, 1986].

Despite this, seabird mortality observed in fishing gear during commercial fishing operations demonstrates the potential for loss of seabirds from entanglement in abandoned fishing gear to be great. Like marine mammals, seabirds are attracted to fish species caught in nets and thus also are susceptible to entanglement and mortality.

Sea Turtles

Sea turtles appear susceptible to entanglement and mortality through many of the same operatives affecting marine mammals. In addition, the tendency for turtles to congregate and feed in areas where food sources, and coincidentally plastics, concentrate, may make them even more susceptible to entanglement.

The Center for Environmental Education cites that "Fishing-related debris was involved in approximately 68% of all cases" involving entanglement of turtles (Center for Environmental Education. 1987. Plastics in the Ocean: More Than a Litter Problem, p.34). An especially significant factor affecting turtles are trawl nets. According to the CEE report, "Trawl net fragments floating at the surface have been described to 'act like magnets' for sea turtles, which are attracted to sargassum mats and other natural floating masses that offer shelter and concentrated food sources."

As with seabirds, the overall effect of plastic entanglement on sea turtle population levels is unknown. However, because all species of sea turtles occurring off the U.S. coast are now classified as either threatened or endangered, the potential impact of plastic pollution to these species as a significant mortality factor cannot be disregarded.

Driftnets

The incidental catch of "non-target" fish by plastic drift gillnets (driftnets) is another significant problem. Driftnets are one of the largest sources of incidental entanglement of marine fish and wildlife and, in our estimate, pose the greatest need for study and regulation. Driftnets are made of extremely durable plastic and are recognized as efficient killers of fish, marine mammals, and marine birds, including waterfowl.

As a result of the energy crisis of the late 1970's, driftnets came into wider use by foreign and domestic fishing fleets as an energy-efficient means to harvest fish. At the same time they also became a major source of mortality on non-target species of marine life. Driftnets up to 30 miles in length are left to drift in the open sea for hours at a time. Because driftnets pose significant hazards to marine life even when fished properly, the magnitude of the problem of unattended nets is readily evident. The problem is further exacerbated when they are lost or discarded, as they continue "ghostfishing" for years afterwards.

The need for more complete data on impacts of driftnets to fish, marine mammals, and marine birds is great. The incidental take by driftnets of important recreational and commercial fisheries also appears substantial in the high seas and in the Fisheries Conservation Zone (FCZ) driftnet fisheries of the Pacific rim nations (Japan, Taiwan, and the Republic of Korea), and to a lesser extent, in the U.S. domestic fishery.

The magnitude of the problem is perhaps best illustrated by the sheer quantity of driftnet used in the squid and salmon fisheries of the North Pacific. It has been estimated that 170,000 km (102,000 miles) of gill net is owned and available for use by fleets fishing in the North Pacific (Laist, D.W. 1986. An overview of the biological effects of lost and discarded plastic debris in the marine environment. Marine Pollution Bulletin).

The high seas squid fishery numbers about 750 vessels, 500 of which are owned and operated by the Japanese, 120 by the Taiwanese, and 100 by the Republic of Korea. A typical Taiwanese vessel deploys about 20 km (12.4 miles) of driftnet each night. Assuming this is the average length of driftnet applied throughout the fishery, approximately 14,400 km (9,300 miles) of net may be set each night during the May to September squid fishing season. If the Japanese high seas salmon driftnet fishery is added to the squid fishery, the total amount of driftnet that may be set each night in the North Pacific is estimated to be 21,300 km (13,200 miles).

Even with a conservative extrapolation from the small amount of data that have been gathered on incidental fish, mammal, and marine bird mortality caused by these fisheries, it is clear that the problem is of staggering proportions. The problem is further compounded by lost or discarded driftnets which continue killing marine life for years. Accidental loss of only a tiny fraction of the driftnet used in this fishery each year would produce significant mortality to marine resources.

INGESTION

Accidental ingestion of plastic debris by marine species can result in blockage of the intestines and interference with normal digestive functioning. While a potentially serious problem, little research has been conducted to identify the scope and extent of the impacts to marine life.

Mammals

While some incidences of ingested plastics have been reported in marine mammals, little is known about the significance of the problem in this group of animals.

Birds

Seabirds, both surface feeding and diving species, appear to be highly succeptible to ingestion of plastic debris. According to Carmen J. Blondin, Deputy Assistant Administrator for Fisheries Resource Management, NOAA, over 50 species of seabirds are documented to have ingested plastics.

Plastics contribute to seabird mortality by causing false satiation and/or intestinal damage. The effect of this mortality on population levels is unknown, although the Laysan albatross and four other species of marine birds are being studied by the U.S. Fish and Wildlife Service near Hawaii.

Sea Turtles

Sea turtles apparently frequently mistake floating plastic bags and sheeting for jellyfish, a preferred food item. Other forms of plastic also are occasionally consumed, resulting in intestinal blockage that weakens or kills the turtle.

The impacts of this source of mortality on sea turtle populations have not been estimated. As previously noted, however, sea turtles, especially immature turtles, gather at sargassum mats for feeding. Unfortunately, these areas also tend to concentrate plastic debris. The resultant high level of mortality among immature turtles points to the possibility that ingestion of plastics is a significant mortality factor among sea turtles.

Fish

Data are extremely limited on the impacts of ingested plastics to fish. Anecdotal evidence reveals that some marine fishes, particularly the various species of flounder off the east coast of the U.S, contain large numbers of ingested plastic pellets.

ANALYSIS OF THE PROPOSED LEGISLATION

The NWF supports the four major objectives of the bills that are the focus of this hearing: 1) implementation and enforcement of Annex V; 2) reduction and control of impacts of land-based sources of plastic pollution; 3) reduction and control of impacts of sea-based sources of plastic pollution; and 4) public education regarding the environmental impacts of plastic pollution. We offer the following recommendations to strengthen these important legislative proposals.

IMPLEMENTATION AND ENFORCEMENT OF ANNEX V

Prospects appear good for Senate ratification of Annex V this fall, which will bring provisions of the Annex into full effect worldwide. However, ratification is only the first step towards actually preventing disposal of plastic and other waste debris from ships. For the Annex to be fully effective, practical and enforceable legislation and regulations implementing the Annex are necessary. We recommend the Committee retain and/or incorporate the following provisions to strengthen the bills under consideration.

- **Annex V should be enforced in all jurisdictional waters of the United States, including navigable inland waters as well as territorial and Exclusive Economic Zone (EEZ) portions of coastal waters.** It is essential that large waterways, such as the Great Lakes and the Mississippi River, which are major shipping corridors and are major sources of plastic pollution, be covered by provisions of Annex V. Thus, we support the language contained in Section 1(6) of S.560.

- **The U.S. Coast Guard is the agency primarily responsible for enforcing Annex V. Legislation implementing Annex V should provide the Coast Guard enforcement authority over all foreign vessels within the U.S. EEZ, regardless of whether they are a nation signatory to Annex V.** According to the provisions of MARPOL, a nation that has ratified Annex V has enforcement jurisdiction over its flag ships worldwide. The Coast Guard has argued during recent House hearings that this MARPOL provision should be incorporated into implementing language for Annex V. Clearly, flag state authorities would face insurmountable problems in trying to enforce the provisions of Annex V on ships that are thousands of miles away, and distributed all over the globe. We could not feasibly expect effective enforcement against foreign vessels within the U.S. EEZ. Therefore, the NWF supports giving the U.S. Coast Guard enforcement authority over foreign vessels in U.S. waters.

- **The U.S. Coast Guard should be authorized to establish criteria for: 1) determining the adequacy of reception facilities for ports, and 2) implementing accountabilty measures for garbage/plastic debris from ships.** Effective implementation of Annex V will significantly increase the need for garbage and plastic reception and disposal facilities in ports. The U.S. Coast Guard, in consultation with the U.S. EPA and the U.S. Department of Agriculture, is best suited to promulgate regulations needed to assist ports in receiving, treating, and disposing of the large volume of plastic debris currently discarded at sea. An even more challenging problem will be to develop parctical, but meaningful, regulations to hold vessels accountable for waste items covered under Annex V. Again, we believe the U.S. Coast Guard is the agency best suited for this task, and should be authorized by the legislation to be responsible for assimilating records on waste disposal, waste management plans for commercial vessels, and other actions to remedy the problem.

• **Except during time of war or national emergency, public vessels should be required to comply with provisions of Annex V within five years**. Public vessels, especially Naval vessels, are a major contributor of plastic pollution in the marine environment. For this reason, we support provisions in S.633 and S.559 that call for public vessel compliance with the provisions of Annex V. However, we also submit that a target year by which full compliance will become mandatory is needed to spur the federal government, particularly the Navy, towards this goal. In testimony before the House Subcommittee on Fisheries and Wildlife Conservation on July 23, 1987, the Navy stated it could not presently comply with Annex V and that years of research and development would be required before technology needed to achieve compliance will be available. In our view, 5-years is a reasonable time frame for this to occur and should be established in the current legislation.

REDUCTION AND CONTROL OF PLASTIC POLLUTION SOURCES

The NWF believes that melding many of the key provisions contained in S.559 and S.633 could provide adequate legislative guidance to deal with the problem of land-based and marine sources of plastic pollution. We also believe the primary responsibility for administering this legislation should be shared by the Environmental Protection Agency (EPA) and the National Marine Fisheries Service (NMFS), with EPA conducting the land-based program and NMFS the marine program. The NMFS is especially well suited to oversee the marine program because the commercial fishing industry is the major source of marine plastic pollution which impacts marine life and NMFS is already responsible for studying and regulating problems associated with this industry.

The Role of the EPA

We support the provisions of Title I, Section 101 of S.559 mandating EPA to conduct a study evaluating the: 1) regulation of plastic pollution dumping; 2) use of incentives to reduce plastic pollution disposal; 3) feasibility of a degradable plastic requirement for items demonstrated to impact fish and wildlife; 4) use of warning labels on particular products; and 5) revision of federal procurement policy for public vessels. We concur with the agencies and organizations that should be consulted, as listed in Section 101(c), and that the study should be completed within 18 months. However, we believe this study should also be directed to land-based sources of plastic pollution, especially items such as beverage connecting devices, plastic bags, and plastic pellets.

The Role of the NMFS

We support the provisions of Title I, Section 107 of S.633 with the following modifications. First, the study should be oriented towards marine forms of plastic pollution, particularly those produced by the commercial fishing industry, and that the NMFS should have lead responsibilty for this portion of the study. Second, we recommend strengthening Section 107(b)(1) by requiring the NMFS to give highest priority to products (e.g., driftnets) suspected of, or demonstrated as, affecting endangered species, marine mammals, or causing population declines in marine species. Third, we suggest amending Section 107(a)(3) to require periodic evaluations of product marking and registration to measure the effectiveness of the legislation for controlling illegally discarded items pursuant to Annex V. Finally, we believe that 18 months rather than 6 months will be necessary to complete this extensive study.

Regulation of Beverage Connectors

Title II, Section 202 of S.599 would regulate six-pack holders and other beverage connecting devices designated by EPA as not constructed of degradable materials. While we support this provision and are encouraged by the fact that 11 states have already enacted similar legislation, these laws have repeatedly been of limited effectiveness because necessary conditions for photo- or bio-degradability are not always met. Therefore, we suggest using the results of the Title I, Section 101(b)(2) study on degradable plastics as a basis for establishing this regulation because it would allow for further refinement of the regulation.

Public Awareness Program

We strongly support the provisions of Section 108 of S.633 which mandate the federal resource management agencies (U.S. Department of Interior, U.S. Department of Commerce, and EPA) to initiate public awareness programs on plastic pollution. We are convinced that effective public education programs which illustrate the impacts of plastic pollution to fish and wildlife will be a vital part of the solution to this complex problem and be a wise investment of tax dollars.

CONCLUSION

In light of the world's dramatically increased use of plastics and the associated impacts of plastic pollution to fish and wildlife resources, this legislation is long overdue. We support the objectives and many of the provisions of S.633, S.559, and S.560 and intend to work with the Committee towards their enactment and implementation.

II

100TH CONGRESS
1ST SESSION

S. 559

To require the Administrator of the Environmental Protection Agency to conduct a study of the measures available to reduce the adverse effect discarding or dumping of plastics on land and in the waters have on the environment, including the effects on fish and wildlife; to make recommendations for eliminating or lessening such adverse effects; and to require the Administrator of the Environmental Protection Agency to control the pollution of the environment caused by the discarding of plastics on the land and in water.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 19, 1987

Mr. CHAFEE introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To require the Administrator of the Environmental Protection Agency to conduct a study of the measures available to reduce the adverse effect discarding or dumping of plastics on land and in the waters have on the environment, including the effects on fish and wildlife; to make recommendations for eliminating or lessening such adverse effects; and to require the Administrator of the Environmental Protection Agency to control the pollution of the environment caused by the discarding of plastics on the land and in water.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, SECTION 1. (a) This Act may be cited as the "Plastic Waste Reduction and Disposal Act of 1987".

(b) The Congress finds and declares that—

(1) when plastic rings and devices, which are increasingly being used to store, carry, and transport a variety of containers, are disposed in the environment, they persist for extended periods of time and have serious adverse impacts on fish and wildlife species and the environment; and

(2) although certain States, which require such rings and devices to break down upon exposure to natural elements, have been largely successful in reducing those impacts, other States have not enacted or enforced such laws.

TITLE I—STUDY OF PLASTIC POLLUTION

SEC. 101. (a) The Administrator of the Environmental Protection Agency (hereinafter referred to in this title as the "Administrator") shall undertake a study for the purpose of determining the various means available to control the adverse effects that the discarding and dumping of millions of pounds of plastics each year have on the environment, including fish and wildlife, within the United States and the oceans, and to enable the Administrator to make recommendations to the Congress as to what actions might be taken to eliminate or lessen such adverse effects.

(b) Such study shall be carried out to determine the feasibility of reducing the amount of plastic discarded, and minimizing the adverse effects of disposal. Such study shall examine methods including, but not limited to—

(1) regulation of dumping, including the discharge of raw plastic pellets on land and in all water bodies, including streams, rivers, lakes, bays, estuaries, and oceans;

(2) requiring the use of degradable plastics (or other materials that would accelerate decomposition) in a portion or all of the fishnets, fishing gear, plastic holders, plastic packing bands, and other finished plastic products which pose a threat to the environment, including fish and wildlife;

(3) use of incentives to reduce plastics disposal, such as recycling, bounties, and rewards;

(4) requiring the use of warning labels regarding proper use and disposal of plastic containers and packaging materials which frequently are found in the marine environment;

(5) reducing ocean dumping of plastics from public vessels by revising Federal procurement policy and provisioning of such vessels to minimize the amount of plastics taken on board; and

(6) engaging in public education designed to encourage the proper handling and disposal of plastics in and around the marine environment, including the informing of recreational boaters and fishermen, commercial fishermen, maritime and petroleum industries, beach goers and others who use plastic in or around the marine environment of the dangers posed to marine mammals, fish, sea turtles and seabirds from improper disposal of plastics.

(c) In carrying out the study required by this title, the Administrator shall—

(1) consult with the United States Fish and Wildlife Service, the National Marine Fisheries Service, the Secretary of Transportation, the Secretary of the Navy, and all other departments and agencies of the United States engaged in research, investigation, or mitigation involving, directly or indirectly, the impact of such plastics debris on the environment, including fish and wildlife, and such departments and agencies shall fully cooperate with the Administrator, and

(2) solicit and consider views and recommendations from representative members of the maritime industry, the fishing industry, the beverage industry, the plastic industry, the petroleum industry, consumer in-

terest groups, environmental groups, and other interested and affected individuals and businesses.

(d) In making such recommendations as to actions which might be taken to eliminate or lessen the impact of the discarding or dumping of such plastics on the environment, including fish and wildlife, the Administrator shall consider and include in the report a statement as to the environmental, public health, and economic impacts of each such action so recommended.

SEC. 102. On or before the expiration of the eighteen-month period following the date of the enactment of this title, the Administrator shall report to the Congress the results of the study conducted pursuant to this title, together with recommendations in connection therewith. The Administrator shall identify those recommendations as to which the Administrator believes there is existing authority to implement, and those recommendations which will require legislative action by the Congress if they are to be implemented.

SEC. 103. There is authorized to be appropriated such sum as may be necessary to carry out the provisions of this title.

TITLE II—REGULATION TO CONTROL PLASTIC POLLUTION

SEC. 201. As used in this title, the term—

(1) "Administrator" means the Administrator of the Environmental Protection Agency;

(2) "regulated item" means any device which is made, used, or designed for the purpose of packaging, transporting, or carrying multi-packaged cans, bottles, or other containers, and which is of a size, shape, design, or type capable, when discarded, of becoming entangled with fish or wildlife; and

(3) "naturally degradable material" means a material which, when discarded, will be reduced to environmentally benign subunits under the action of normal environmental forces, such as, among others, biological decomposition, photodegradation, and hydrolysis.

SEC. 202. Within eighteen months after the date of the enactment of this title, the Administrator shall require, by regulation, any regulated item to be made of a naturally degradable material which decomposes within a period established by such regulation. The period within which decomposition must occur shall be the shortest period of time consistent with the physical integrity of the item for its intended use.

SEC. 203. Nothing in this Act shall preclude or deny any right of any State or political subdivision thereof to adopt or enforce any regulation, requirement, or standard of performance respecting a regulated item that is more stringent than regulations promulgated pursuant to this Act.

Sec. 204. (a) any regulation promulgated by the Administrator pursuant to this title shall contain provisions sufficient to assure that adequate recordkeeping and testing requirements for implementing and enforcing such regulation will be carried out.

(b) Any violation of a regulation promulgated by the Administrator pursuant to this title shall be punishable by a fine of not to exceed $25,000, or imprisonment for not more than 12 months, or both.

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II

100TH CONGRESS
1ST SESSION

S. 560

To implement the provisions of Annex V to the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 19, 1987

Mr. CHAFEE introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To implement the provisions of Annex V to the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, as used in this Act, the term—

(1) "garbage" means all kinds of victual, domestic and operational waste (excluding fresh fish and parts thereof), generated during the normal operations of a vessel and liable to the disposed of continually or periodically, except that such term shall not include those substances which are defined or listed in other Annexes

to the "International Consumption for the Preventing of Pollution from Ships";

(2) "nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law;

(3) "ship" includes any private or public ship, and any ship owned or operated by the United States Government or any State government;

(4) "United States" means the several States, District of Columbia, Commonwealth of Puerto Rico, United States Virgin Islands, Guam, American Samoa, Commonwealth of the Northern Marianas, and the Trust Territories of the Pacific Islands;

(5) "dump" means to make disposition of, to throw or deposit, or cause, suffer, or procure to be disposed of, throw, or deposit;

(6) "water of the United States" includes any navigable waters of the United States, any tributary of any such navigable water, or any ocean waters over which the United States may exercise control and jurisdiction by law or under accepted principles of international law in order to protect its territory or exclusive economic zone as established by proclamation numbered 5030, dated March 10, 1983; and

(7) "person" includes any individual, Corporation, or other entity, including a governmental entity.

SEC. 2. (a) It shall be unlawful for any person to dump in any water of the United States any plastic item or thing, including but not limited to, synthetic ropes, synthetic fishing nets, and plastic garbage bags. For purposes of this subsection, the prohibition contained in paragraph (1)(a) of regulation 3 of Annex V (relating to disposal of plastics) shall apply within the exclusive economic zone of the United States.

(b) It shall be unlawful for any person to dump in any water of the United States—

(1) any dunnage, lining, or packing materials which will float, if such dumping is within 25 nautical miles of the nearest land; or

(2) any food wastes or other garbage, including paper products, rags, glass, metal, bottles, crockery, or similar refuse, if such dumping is within 12 nautical miles of the nearest land.

(c) In the case of garbage referred to in subsection (b)(2) of this section, such garbage may be dumped if it is dumped in an area which is at least 3 nautical miles from the nearest land, and if it has passed through a comminutor or grinder and it is capable of passing through a screen with openings no greater than 25 millimeters.

(d)(1) It shall be unlawful to dump in any water of the United States any plastic, garbage, synthetic ropes, synthetic fishing nets, plastic garbage bags, dunnage, lining materials which will float, paper products, rags, glass, metal, bottles, or crockery and similar refuse from any fixed or floating platform engaged in the exploration, exploitation, or associated offshore processing of seabed mineral resources, or to dump any such aforementioned item or thing from any ship which is alongside of any such platform or which is within 50 meters of any such platform.

(2) In the case of food waste referred to in paragraph (1) of this subsection, such waste may be dumped from such platform, or from a ship alongside or within 500 meters of such platform, if it is dumped in an area which is at least 12 nautical miles from the nearest land, and if it has passed through a comminutor or grinder and is capable of passing through a screen with opening no greater than 25 millimeters.

(3) Notwithstanding any other provision of this Act, it shall not be a violation of this Act if the Act which would have otherwise been a violation—

(A) was a necessary act for the purpose of securing the safety of a ship and those on board or saving a life at sea;

(B) occurred as a result of the plastic, garbage, or other regulated item or thing escaping due to damage to a ship or its equipment, and if all reasonable precautions were taken beyond and after the occurrence in order to prevent or minimize such escape; or

(C) occurred as a result of an accidental loss of any such plastic, garbage, item, or thing, and if all reasonable precautions were taken before and after the occurrence in order to prevent or minimize the loss.

SEC. 3. (a) Any person who, after notice and an opportunity for a hearing, is found to have failed to comply with the requirements of this Act shall be liable to the United States for a civil penalty, not to exceed $25,000 per violation. The amount of the civil penalty shall be assessed by the President of the United States by written notice. In determining the amount of the penalty, the President shall take into account the nature, circumstances, extent, and gravity of the violation, the degree of culpability any history of prior violation, ability to pay, and such other matters as justice may require. The President may compromise, modify, or remit, with or without conditions, any civil penalty which is subject to imposition or which has been imposed under this section. If any person fails to pay an assessed civil penalty after it has become final, the President may refer the matter to the Attorney General for collection.

(b) In addition to, or in lieu of, assessing a penalty under subsection (a) of this section, the President may request the

Attorney General to secure such relief as necessary to compel compliance with this section, including, but not limited to, a judicial order terminating operations. The district courts of the United States shall have jurisdiction to grant such relief as public interest and the equities of the case may require.

SEC. 4. The President shall ensure that public vessels of the United States comply with Annex V and this Act to the maximum extent consistent with the national security requirements of the United States. The Secretary of the Navy and, with respect to the United States Coast Guard, the Secretary of Transportation, shall examine Federal procurement policy for public vessels (with regard to the amount of plastics taken aboard such vessels), and shall determine to what extent such policies can be revised to enhance compliance with Annex V and this Act, to the maximum extent consistent with the national security needs of the United States.

SEC. 5. The Secretary of Transportation shall take such action as may be necessary to ensure the provision of necessary facilities at ports and terminals for the reception or treatment of plastic, garbage, and other items and things regulated by this Act, without causing delay to ships, and according to the needs of the ships using such ports and terminals.

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II

100TH CONGRESS
1ST SESSION

S. 633

To prohibit the disposal of plastic products in the waters under the jurisdiction of the United States, to require a study to determine ways to eliminate plastic pollution, to require a public awareness program about plastic pollution, and to implement Annex V to the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978.

IN THE SENATE OF THE UNITED STATES

MARCH 3, 1987

Mr. LAUTENBERG (for himself, Mr. STAFFORD, and Mr. DURENBERGER) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To prohibit the disposal of plastic products in the waters under the jurisdiction of the United States, to require a study to determine ways to eliminate plastic pollution, to require a public awareness program about plastic pollution, and to implement Annex V to the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Plastic Pollution Control Act of 1987".

TITLE I—PLASTIC POLLUTION CONTROL MEASURES

DEFINITIONS

SEC. 101. As used in this Act, the term—

(1) "plastic product" means any container, item, thing, or other device which is composed substantially of plastic;

(2) "waters under the jurisdiction of the United States" means—

(A) the waters of the United States, including the territorial sea, and

(B) the waters included within a zone, contiguous to the territorial sea of the United States, of which the inner boundary is a line coterminous with the seaward boundary of the territorial sea, and the outer boundary is a line drawn in such a manner that each point on it is two hundred nautical miles from the baseline from which the territorial sea is measured;

(3) "United States" includes the several States, the District of Columbia, the Virgin Islands of the United States, American Samoa, Guam, and Northern Mariana Islands.

(4) "Administrator" means the Administrator of the Environmental Protection Agency, unless indicated otherwise.

(5) "Secretary" means the Secretary of the department in which the Coast Guard is operating, unless indicated otherwise.

(6) "Ship" means a vessel either of United States registry or nationality or foreign registry or nationality (other than a public vessel) of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, and fixed or floating platforms;

(7) "Person" means an individual, firm, public or private corporation, partnership, association, State, municipality, commission, political subdivision of a State, or any interstate body.

PROHIBITED ACTS

SEC. 102. (a) It is unlawful to dispose of plastic products into the waters under the jurisdiction of the United States from a ship or other source, or to dispose of any plastic product in an area where such plastic product is likely to be carried into the waters under the jurisdiction of the United States, either by ordinary or high tides, or by storms, floods, winds, or otherwise.

(b) Subsection (a) of this section shall not apply to:

(1) the disposal of plastic products from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or

(2) the escape of plastic products resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape;

(3) the accidental loss of the plastic product, such as the loss of synthetic material incidental to the repair of fishing nets, if all reasonable precautions have been taken to prevent such loss;

(4) the disposal of plastic products from sources other than ships necessary for saving life or securing the safety of such source, or resulting from damage to such source, if all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or

(5) disposal specifically allowed pursuant to a valid permit under the Marine Protection Research and Sanctuaries Act or Clean Water Act.

(c) The President shall ensure that public vessels of the United States comply with this Act to the maximum extent consistent with the operational capabilities and requirements of those vessels.

CRIMINAL PENALTIES

SEC. 103. (a) Effective six months after enactment, any person that shall willfully and knowingly violate, or that shall willfully and knowingly aid, abet, authorize, or instigate a violation of section 102, upon conviction for such violation, in addition to or in lieu of any civil penalty that may be imposed under section 104, shall be fined not more than $50,000 or imprisoned for not more than three years, or both. In the discretion of the court, up to one-half of such fine may be paid to the person or persons giving information leading to conviction.

(b) The United States Sentencing Commission in establishing guidelines for sentences under this section shall take into account the nature, circumstances, extent, and gravity of the violation, and with respect to the violator, ability to pay, effect on ability to continue business, economic benefit resulting from such violation, any history of prior violations, the degree of culpability, and such other matters as justice may require.

(c) This section shall be carried out with respect to foreign ships consistent with the obligations of the United States under international law.

(d) Courts shall not apply the penalty of imprisonment in this section to United States ships for acts for which such a penalty cannot be imposed on foreign ships consistent with the obligations of the United States under international law.

CIVIL PENALTIES

SEC. 104. (a) Effective six months after enactment, any person who violates section 102 shall be liable to the United States for a civil penalty. The Secretary of the Department in which the Coast Guard is operating, the Secretary of Commerce, the Administrator, or the Secretary of Interior may assess either a class I or class II penalty. Up to one half of such penalties may be paid to the person or persons giving information leading to the assessment of such penalty.

(b) CLASS I.—The amount of a class I civil penalty may not exceed $1,000 per violation. Before issuing an order assessing a class I penalty, the person assessed such penalty must be given written notice of the proposal to issue such order and the opportunity to request, within thirty days of the date such notice is received by such person, a hearing on the proposed order. Such hearing shall not be subject to section 554 or 556 of title 5, United States Code, but shall provide a reasonable opportunity to be heard and to present evidence.

(c) CLASS II.—The amount of a class II penalty under this subsection may not exceed $25,000 for each such violation. Each day of continuing violation shall constitute a separate violation of section 102.

(d) A class II civil penalty for a violation shall be assessed by an order made on the record after opportunity (provided in accordance with this subsection) for a hearing in accordance with section 554 of title 5, United States Code. Before issuing such an order, written notice shall be given to the person to be assessed a civil penalty under such order of the proposal to issue such order and provide such person an opportunity to request, within fifteen days of the date the notice is received by such person, such a hearing on the order.

(e) In determining the amount of a civil penalty, the nature, circumstances, extent, and gravity of the violation or violations, and with respect to the violator, ability to pay, effect on ability to continue business, the economic benefit resulting from such violation, any history of prior violations, the degree of culpability, and such other matters as justice may require shall be taken into account.

(f) Any civil penalty which may be imposed under this section, may be compromised, modified, or remitted, with or without conditions. The amount of such penalty, when finally determined, or the amount agreed upon in compromise, may be deducted from any sums owed by the United States to the person charged.

(g) Any person who requested a hearing respecting the assessment of a civil penalty may file a notice of appeal, in the case of a class I penalty, in the United States District Court for the District of Columbia, or in the district in which the violations are alleged to have occurred, or in the case of a class II penalty, in the United States Court of Appeals for the District of Columbia or, in any other circuit in which such person resides or transacts business. Such notice may only be filed within the thirty-day period beginning on the date the order making such assessment was issued. Such notice must also simultaneously be filed with the Secretary of Interior, the Secretary of the Department in which the Coast Guard is operating, the Secretary of Commerce, or the Administrator, as the case may be, and the Attorney General.

(h) If any person fails to pay an assessment of a civil penalty—

(1) after the order making the assessment has become a final order and if such person does not file for judicial review of the order in accordance with subsection (g) of this section, or

(2) after a court in an action brought under subsection (g) has entered a final judgment in favor of the Secretary of the Department in which the Coast Guard is operating, the Secretary of Commerce, the Secretary of Interior, or the Administrator,

the Attorney General shall recover the amount assessed (plus interest at currently prevailing rates) from the date of the expiration of the thirty-day period referred to in subsection (g) or the date of such final judgment, as the case may be, in an action brought in any appropriate district court of the United States. In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.

ENFORCEMENT

SEC. 105. It shall be the responsibility of each Federal department, agency, or other instrumentality of the United States to assist in the administration of this Act, including the reporting of violations and conducting investigations with respect thereto, including the United States Coast Guard, National Oceanic and Atmospheric Administration, Department of Interior, and Environmental Protection Agency.

CITIZEN SUITS

SEC. 106. (a) Except as provided in subsection (b) of this section, a person may bring an action on his own behalf—

(1) against any person alleged to be in violation of this act or regulations issued thereunder; or

(2) against any officer of the United States where there is an alleged failure to perform any act or duty under this Act that is not discretionary.

(b) No action may be commenced under subsection (a) of this section—

(1) prior to sixty days after the plaintiff has given notice, in writing and under oath, to the alleged violator, or the United States officer concerned, the State in

which the alleged violation occurs, and the Attorney General; or

(2) if an officer of the United States has commenced enforcement or penalty action with respect to the alleged violation and is conducting such procedures diligently.

PLASTIC POLLUTION REDUCTION STUDY

SEC. 107. (a) The Administrator shall undertake a study to determine methods to reduce or eliminate the disposal of plastic products into the waters under the jurisdiction of the United States.

(b) Such study shall include, but not be limited to the following:

(1) identifying specific plastic products whose use, misuse, or improper disposal has caused significant harm to marine life, birds, wildlife, or their habitat;

(2) evaluating the feasibility of using alternative products to products described in subparagraph 1 of this subsection in terms of cost effectiveness, including an assessment of environmental risks, disposability, durability, public health and safety, and availability of such alternative products;

(3) evaluating the feasibility of labeling a product or products identified in subparagraph (1) of this subsection in a manner that indicates the penalties established by this Act and the harms caused by improper

disposal of such products. Determination of feasibility shall include considerations of the cost effectiveness of such labeling, of the manner of distribution of a product, and the size of the product;

(4) evaluating the feasibility of making a product or products described in subparagraph (1) of this subsection from degradable plastic resins. Determination of feasibility shall include considerations of the properties of the endproducts of degradable plastic products, such as biotoxicity, potential for bioaccumulation, persistence, and fate within the environment under various physical conditions; and considerations of the efficiency and variability of degradation due to differing environmental conditions. Determination of feasibility shall also include considerations of the purpose of such product, including the duration for which such product was designed to remain intact.

(c) In carrying out the study required by this section, the Administrator shall—

(1) consult with the National Oceanic and Atmospheric Administration, the United States Fish and Wildlife Service, the National Marine Fisheries Service, the Consumer Product Safety Commission, the Food and Drug Administration, the Coast Guard, and all other Federal departments and agencies engaged in

research, investigation, or studies involved directly or indirectly with plastic pollution; and

(2) solicit and consider views and recommendations from representatives of the plastics industry, beverage industry, glass industry, paper industry, metal industry, fishing industry, consumer interest groups, environmental groups, and other interested and affected groups, industries, businesses, and individuals.

(d) On or before the expiration of the six-month period following the date of enactment of this Act, the Administrator shall report to Congress concerning the results of such study, together with the recommendations of the Administrator on ways to eliminate or significantly reduce plastic pollution of the waters under the jurisdiction of the United States. In making such recommendations, the Administrator shall consider and include in the report a statement as to the environmental, public health, and economic impacts of each such action so recommended. The Administrator shall identify those recommendations as to which the Administrator believes there is existing authority to implement, and those, the implementation of which, will require action by Congress. The Administrator shall also include in the report an indication of those governmental and private sector entities and persons consulted pursuant to subsection (c) of this section, along with indications of the views of such consulted entities and persons.

PLASTIC POLLUTION PUBLIC AWARENESS PROGRAM

SEC. 108. (a) Within three months of enactment, the Administrator of the Environmental Protection Agency, the Administrator of the National Oceanic and Atmospheric Administration, and the Secretary of Interior, shall commence and conduct a public outreach program to educate the public, including recreational boaters, fishermen, and others, as to the harms caused by the improper disposal of plastic products and the penalties for violations of this Act.

(b) Within three months of enactment, the Administrator of the Environmental Protection Agency, the Administrator of the National Oceanic and Atmospheric Administration, and the Secretary of Interior, shall commence and conduct, in such manner as they shall determine, public service announcements pertaining to the harms caused by the improper disposal of plastic products and the penalties for violations of this Act.

TITLE II—IMPLEMENTATION OF ANNEX V

ADMINISTRATION AND ENFORCEMENT

SEC. 201. (a) Upon ratification, with the advice and consent of the Senate, and as is consistent with this Act, Annex V (Regulations for the Prevention of Pollution by Garbage from Ships, 1973), to the International Convention for the Prevention of Pollution from Ships, as modified by the

Protocol of 1978 (hereinafter in this title referred to as "Annex V"), shall be administered and enforced by the Secretary.

(b) The Secretary shall prescribe regulations to carry out the provisions of Annex V.

(c) The Secretary may utilize by agreement, with or without reimbursement, personnel, facilities, or equipment of other Federal departments and agencies in administering Annex V and this title.

PROHIBITED ACTS

SEC. 202. It shall be unlawful to dispose of any material from a ship in violation of Annex V. The prohibition contained in paragraph 1(a) of regulation 3 of Annex V, shall include application within the water under the jurisdiction of the United States.

PENALTIES

SEC. 203. Violations of section 202, shall be subject to the penalties of sections 103 and 104 of this Act, and shall take effect for purposes of this title when Annex V enters into force.

TITLE III—RELATION TO OTHER LAW

SEC. 301. (a) Nothing in this Act may be interpreted or construed to supersede or preempt any other provisions of Federal or State law.

(b) Nothing in this Act shall be construed or interpreted as preempting any State from imposing any additional requirements.

(c) Nothing in this Act shall affect or otherwise impair the rights or obligations of any person under Federal, State, or common law.

TITLE IV—AUTHORIZATION

SEC. 401. There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

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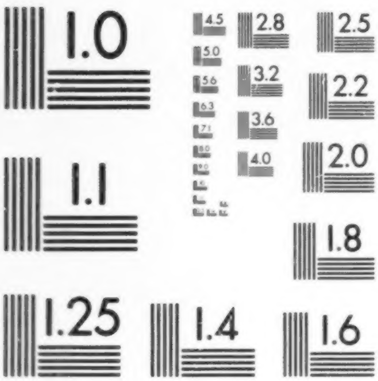
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